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A. I. FINDLEY, - - - - - }
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Continued Improvement

The Steel Corporation's January Gain May Exceed 300,000 Tons

Tin Plate Advanced—Better Outlook for the Foundry Trade

Our pig iron statistics for January show an output of 1,759,000 tons, or 18,000 tons less than in December, indicating the extent of the slump in operations at the opening of the year. Yet the report of capacity active February 1 reflects plainly the improvement in finished material, the 206 furnaces then in blast producing at the rate of 59,568 tons a day, against 53,347 tons a day for 189 furnaces January 1.

Of the net gain of 17 furnaces in the past month the steel works furnaces contributed 14 and the merchant furnaces 3. So many furnaces were banked at the opening of the year that production fell off to 19,700,000 tons a year. On February 1 it was 22,000,000 tons a year.

Some measure of the increased activity in steel lines is found in the business of the leading Pittsburgh interest. In rails and billets its new orders and specifications in January were 50,000 tons more than in December.

What has been given out of the bookings of the Steel Corporation in January, including the Pennsylvania and New York Central rail business, indicates that the unfilled orders January 31 were fully 300,000 tons more than on December 31.

In the new demand nearly all finished lines are represented, but apart from rails the heavier products still lag behind tin plate and wire.

The expected advance in tin plate was made February 3 and is 10 cents a box on coke plates, while charcoal bright plates are advanced 30 cents, with a further increase for the more heavily coated plates. Some producers favored 25 cents advance on coke plates. Nearly all mills are booked six months ahead. As in the case of wire, heavy tin plate buying preceded the advance.

Prices on sheets are firmer than in several months. Most of the leading mills are operating from 60 to 70 per cent. of capacity, which is a distinct improvement.

New lake vessel work announced in the past two weeks calls for 17,000 tons of plates and shapes for six boats. Plate mills are getting more work, but still have an uncomfortable amount of slack capacity.

Structural contracts include 4000 tons for the Vine street pier at Philadelphia and 3000 tons for a Louisville & Nashville viaduct at Louisville, Ky.

Bars have not shared in the movement of the past three weeks. Shipments on old orders are well taken, but there is no important new contracting.

Rail orders include over 61,000 tons for the New Haven, including the Boston & Maine and Maine Cen-

tral. The Lackawanna has placed 23,000 tons and the St. Paul is about closing for 60,000 tons.

In the pig iron market a sale of 25,000 tons by a Southern interest, at less than $11, for No. 2, is the largest transaction. Recent purchases of the leading pipe interest are put at 40,000 tons. The foundry outlook is more promising in some districts, and efforts have been made by a number of melters to buy for the second half of the year. This is particularly the case with Western malleable foundries. Radiator and other interests have bought considerable Buffalo iron at low prices.

Better reports from the machinery markets, in which increased railroad buying is mentioned, should help the drooping foundry industry and show its effect on the market for foundry pig iron.

Recent buying of basic iron in eastern Pennsylvania amounts to 20,000 tons and further business is pending. The last sales were at $14.50 and some furnaces have advanced their price to $15. Central Western furnaces which recently accepted low prices for basic are taking a firmer stand this week and some are quoting $14, at furnace. A meeting next week will take up again the proposed selling agency for basic iron.

The copper statistics for February 1 show an increase of 20,000,000 pounds, or about 16 per cent. in domestic stocks. While larger than looked for, the increase has had no effect thus far on the price, electrolytic selling for 12.37½. The decline in pig tin, which met some buying in its early stages, has now frightened consumers from the market.

The Gary Idea in the International Steel Trade

Engrossed as the steel manufacturers of the United States have been for several months in the problems growing out of the situation at home, it was not to be expected that international relations would be given prominence. However, there are indications that the work begun at the New York meeting of the American Iron and Steel Institute in October, 1910, looking to a more friendly footing of competitors in the world's steel markets has not been allowed to lag. It is now expected that another international conference will be held at Brussels, Belgium, in June of this year, with the purpose of making definite progress toward the end sought when the foreign manufacturers were invited to New York.

The *Proceedings* of the American Iron and Steel Institute, covering the New York meeting, have been distributed in the past week. They contain, in addition to a full report of the Waldorf-Astoria sessions for the reading of papers (already given in these columns) an interesting report of the luncheon meeting at the Railroad Club, New York, on October 24, the day before the foreign visitors sailed for home. Opinions may differ as to the economic soundness of the proposals of Chairman Gary and his friends, the home and foreign manufacturers of steel, but it is to be said that there is no secrecy in their avowals. The publication and circulation both in the United States and Europe of the remarks made at the Railroad Club luncheon is evidence that publicity is not least among the innovations represented by the Gary idea.

As the spokesman on that occasion, Chairman Gary explained in somewhat the line of thought followed in his address at the dinner he gave last month, how price maintenance could be made effective without a formal agreement. He said that steel manufacturers in the United States had some advantage over those from abroad in that about 95 per cent. of them "are in substantial accord, working in harmony, trying to help one another." This condition he attributed to the fact that in the past few years

> the iron and steel industry has been in the control of a class of men who have the intelligence, the education, the experience and also the disposition to work together on two grounds—first, that it is pleasant and agreeable to have such a friendly feeling toward each other, and secondly, because as a matter of intelligent reasoning we know the pecuniary results are sure to be better.

Going further into the matter, Judge Gary explained to his foreign guests the procedure which had been deemed permissible in the United States. Particularly noteworthy in the following extract is the distinction between actual competition and potential competition, or leaving oneself free to compete:

> On account of the laws of this country we have to work with the greatest care. We have to be very particular what we say and what we do. We cannot enter into contracts with each other which tend to restrict trade; we cannot lawfully enter into a contract to maintain prices, to divide territory, to restrict output, or in any way to restrain general trade; but, as I said at the meeting of the American Iron and Steel Institute, quoting the Attorney General, it is just as well settled in this country that under the law we are not compelled to compete, if we only leave ourselves free to compete. If we enter into no arrangement which restricts us from entering into competition, if we so desire, we are within the law, and, therefore, if by coming together and divulging our business, by making statements of exactly what we are doing and what our prices are, saying one for himself only what he proposes to do, in other words, disclosing our methods and our conditions and our prices, so that every one is thoroughly acquainted with the business of others, and, therefore, as a matter of fair and friendly competition, maintains his prices and keeps within his proper domain and treats his neighbor as his neighbor ought to be treated, we are not violating any principle of law.
>
> Since 1907, following the great panic, we have in a large measure at least worked together; we have secured as a rule the maintenance of fair prices; we have kept within our own particular bailiwicks; we have avoided injuring our neighbors who are in competition with us; we have helped one another almost daily and have secured and maintained conditions that are very much better than they were during the times many years ago when, regardless of public sentiment, contracts were actually made, though not kept, to establish and maintain prices. We have a committee which we call the Committee on Improvement in Methods; that is more or less general and very comprehensive; but it is an advisory committee. It is a committee to whom any one may apply at any time for information and advice; a committee without any power except a moral power; a committee which may advise and which advice the one who receives it may follow or reject as he sees fit. The result is that any one at any time believing his neighbor is not conducting his business as it ought to be conducted in any respect, may go before that committee and ask for information and advise concerning that particular business. The committee may take up the subject matter with the one whose methods are complained of, and, after obtaining all the facts, advise that individual what ought to be done. The individual may follow the advice or not; he is under no obligation to follow it, but frequently, if not generally, the result is that he is disposed to adopt the recommendation of the committee.

Illustrating the practical working of the American plan, the speaker gave this incident:

> A gentleman to-day appealed to the fairness of the president of our corporation in regard to the methods of doing business in a certain locality, stating the facts and giving his reasons for believing that it was not quite neighborly. Our president said that he was unacquainted with the facts, but he would ascertain them immediately, and, if a correct statement had been made, his disposition would be to advise a change in that particular locality, and I have not a shadow of doubt the error committed there will be corrected immediately. There is no obligation to do it, except a moral obligation; a disposition to carry into practical effect what I have said in this friendly co-operation which means when one company benefits another company it benefits itself. It means that one company cannot succeed permanently to the disadvantage of another.

Judged by the expressions of the visitors from Great Britain, Germany, France, Belgium and Austria, in re-

sponse to Chairman Gary's proposal of an international iron and steel association on the lines of the American Iron and Steel Institute, such an organization is in a fair way to be realized. Naturally the 25 guests of last October came with no authority to act for others. They came to hear and promised to go home and report. At the Railroad Club meeting, as the *Proceedings* just published reports it, no discordant note was sounded and each of the foreign representatives promised to commend international co-operation to the steel manufacturers of his own country. The movement, indeed, took even more definite shape than this, the following resolution being passed:

> With a view to forming an international association to extend existing friendly relations between steel producers throughout the world, and to provide for conferences in relation to matters in which they are all interested, it is recommended by the gentlemen here assembled that a committee be formed by the producers of the different countries to consider the subject and report to a meeting to be held in Europe in 1911. The committee shall be made up of representatives of the different countries to be appointed from nominations made by them respectively. The objects to be attained are not intended to conflict with the province of existing iron and steel institutes or technical societies already organized.

The committees thus provided for have been appointed in the respective countries, it is understood, and are now co-operating, with a view to the more definite action which it is expected will be taken at Brussels in June. On the practical outcome of the movement, time will be needed to give light. Some of the international arrangements already in existence in the steel trade—particularly that relating to rails—are matters of common knowledge. The international trade in structural steel has been conducted with some measure of co-operation, and so far as its European side is concerned is chiefly in the hands of two associations. As efforts are made to regulate conditions in certain other lines where the concerns are of smaller caliber and more numerous, difficulties will naturally increase. In pipe and wire there is a measure of co-operation now, but comparatively little in plates, sheets and bars.

Naturally international co-operation involves many difficulties growing out of international rivalries, that are often stronger than the inducement of larger pecuniary returns. But there is no question of the growing unwillingness of steel manufacturers in all countries to make sacrifice sales in outer markets for the sake of setting a hot pace for their foreign competitors. Moreover, the anomaly of the lowest prices for steel being constantly made in countries which do not produce it will hardly be tolerated indefinitely.

The Copenhagen Polytechnic Plan

The Polyteknisk Loereaustalt, the great engineering school of Copenhagen, has established a practice in its course—which should have strong advocates among American educators—of compelling a protracted period of actual industrial training in connection with the regular curriculum. The course is four and one-half years. At the expiration of the first two years, the student must pass an examination and thesis test and then serve at least two years in some practical work which is in keeping with the department of which he is a student. At the end of the period he returns to the school and takes the final two and one-half years.

Complaint has always been made that the average graduate of an engineering school requires several years of training in his employer's service until he becomes of real value. It may be argued that a young man would do as well by taking two years of practical work after graduation as two years in the middle of the course, but this is not accepted as correct. A scientific course must be largely theoretical and a great handicap to the majority of students is that they do not realize what they really need to get out of the school. The young man taking the course has probably never rubbed up against the practical application of engineering except in a superficial way. A certain time in an industrial atmosphere, before the course begins, or under the Copenhagen system, gives the student an entirely different viewpoint during his theoretical work. An objective, more or less pronounced, has been created for him.

British Insurance Against Unemployment

Radical labor legislation abroad must always be regarded with something like apprehension in America, because established customs of other countries contrive to find their way here, often being intensified and made more obnoxious to employers by our legislative bodies. The British Parliament appears to be on the eve of passing a bill providing compulsory insurance against unemployment, which shall be paid for by the employer, the employee and the state, in some proportion not yet determined. The proposed insurance will be by trades, and the experimental bill, following a British custom, will confine its operation to a limited number of employments, including works of construction, engineering, machine and tool making, and ship and boat building, comprising a total employment of upward of 2,500,000 adult males.

The law will not act to help the habitually idle workman. It is not intended for him, but for those who are industrious. To review the measure briefly, before a man can receive insurance benefits he must have contributed a few cents a week for about eight months. When out of employment he will receive nothing for the first week; if employment is not secured, his benefit will be $1.92 a week for 15 weeks, or longer if the weekly benefit is smaller, but in no case for more than 20 weeks. With each succeeding application for insurance benefits he must have contributed to the fund for a longer period. If work is secured for him (and this will be looked after with system) he must accept it or furnish a good reason for a declination, and with work his insurance ceases.

The experiment, if carried out, will be watched with keen interest in all industrial countries. It savors less of paternalism than many such measures. But there will be skeptics until comprehensive public benefits will have established the real value of this new scheme of insurance.

Specialized Seeking for New Customers

A factor in the selling system of industrial works which is coming to be recognized as yielding large returns is the systematic and constant search for possible new customers. A few very large companies employ special men for this purpose—free lances who have nothing to sell and nothing to buy, but who must constantly be keenly alert for new outlets for the company's products. The reports of such a man go to the sales department and are acted upon quickly and ener-

getically. The results achieved are said to be well worth the cost of the department.

Salesmen are supposed to do just this work, but of course much of their time is occupied in taking care of known buyers. The salesmen's efficiency in the search for the unknown varies greatly. Most of them need stimulation in this respect. Occasionally, however, a good salesman is developed from the encouragement given by an employer to some young man on his force who is seen to have the requisite qualities for taking the initiative in hunting up new customers. An instance of this kind is recalled in which a young man who had been schooled in the details of the business was turned loose with instructions to work up new trade and to avoid calling upon those who were regular customers. Of course, his familiarity with the products handled by his employers enabled him to select consumers in possible need of just such merchandise. His work was done with such enthusiasm, feeling the responsibility imposed upon him of establishing a reputation for himself, that it was not long until he had developed much more trade than had been thought possible. It was found that quite important consumers within easy reach of the establishment had never been cultivated with a view to securing their trade. It is needless to say that the young man speedily developed into one of the most important members of the selling force.

It must be admitted that the supplementary investigations in pursuit of new business are much more thoroughly done if made a specialized task. Smaller houses could not afford to maintain men for the one purpose alone, but there are few selling forces that would fail to improve in efficiency if the search for new customers and new purposes for the product and possibilities for new products was carried on with more system. During dull times the work should be pursued relentlessly. In known cases almost unbelievable results have followed organized effort in this direction.

Correspondence

Legislation and a Lower Cost of Living

To the Editor: The people have been educated to the point of believing that all the ills, misfortunes and sorrows of life and the failure to get what they want are caused by the party in power, and that conditions would be reversed if they put in power the party that was out. A great hue and cry went up in the last campaign concerning the failure of the party in power to revise the tariff downward. It was charged also that the trusts were robbing us of our liberty and the pursuit of happiness; that the high cost of living was due to the above alleged causes. In the dust and turmoil of political battle it was overlooked that we now have the best tariff we ever had, and the lowest on a general average, and it was forgotten that trusts rob us no more than every one and anybody will, when an opportunity offers.

However untrue and unjust the charges against the tariff and the trusts, there is no denying that the cost of living is high. The serious question is, What makes it so, and what is the remedy? We have had a lower cost of living under a higher tariff, and robbers under one guise or another we always have had with us—and always will. But wages were never so high as they are now, and with coal miners, bricklayers, carpenters, plumbers, railroad employees and all other classes of labor getting the highest wages and the best conditions ever known in this country, or any other, the cost of living cannot be low. High wages and low cost of living do not go hand in hand. They are incompatible. This is so plain a proposition as to require no elucidation. It is self-evident.

The fact is that the high cost of living is due to high wages, shorter hours, less efficiency, reduced production per man and per dollar, and other causes rather than that high wages are due to the high cost of living. The people and the politicians are responsible for existing conditions. Public sentiment as expressed is with scarcely an exception in favor of demands for an increase of wages (higher costs), and helps enforce the demands, forgetting for the moment who ultimately has to pay the bills. The politicians advocate anything that will secure votes, however pernicious, unsafe and unsound, contrary to the economic principles of existence, dangerous to the perpetuity of the republic and in conflict with the fundamental laws of the Creator.

Besides, we have too many nonproducers, too many middlemen, who extract high toll from both employer and employee, and whose support comes from the earnings of labor and capital. They produce nothing, contribute nothing to the general welfare, and are heavy burdens on society. In every city, village and community there are 10 tradesmen, where one would be sufficient; there are 10 men living by hook and crook, when one would be superfluous. On account of the small volume of business and large proportionate expenses, the innumerable retail merchants have got to get excessive profits in order to exist. But this is aside the main question, although it adds materially to the cost of living.

For "the high cost of living" there is a remedy as simple as the cause. With free trade will come a reduction of wages corresponding to those of other countries, which will turn the tide of labor back to the land and relieve the congested centers. This condition will cause a larger and cheaper production of the necessities of life. There will be more abundant and cheaper labor for the farmer, and consequently more plentiful and less costly food supplies. The fewer railroad and industrial employees will have less money to buy with. Thus, step by step, will the high cost of living be cured.

Putting grains, meats, animals, vegetables, fruits, wool, woolen and cotton goods on the free list will be extremely helpful in securing lower prices for these articles, as they are highly protected now; and the agriculturist will be glad to contribute his share to the general welfare, for he is fair and honest and believes in doing to himself what he would have done to others.

But after all has been said about ways and means of getting prices down, the question remains: Are we really to have a lower cost of living? Can we afford to pay the price of the remedy for "the high cost of living?" When the end comes, it will be found that a protective tariff is first of all for the protection of the American workingman.

AN OHIO MANUFACTURER.

Sand Blast Pressures

To the Editor: The following, we believe, gives the correct comparison between the high and low pressure type of sand blast machine. It is entirely a question of economy. Economy of work comes under two heads. First, the actual economy of the sand blast machine itself, the cost of the compressed air used and sand worn out by the machine. And second, the amount of sand blast power that can be conveniently put into the hands of one man so as to reduce the wage cost of the operation.

One pressure of air is not the most economical for all uses. The grain of sand must deliver a blow of a force properly proportioned to the work that it is expected to do. A given horsepower of compressed air will impart a certain velocity to a given weight of sand per minute and no more. If this velocity is sufficient, then doubling the velocity of the sand will reduce the factor of economy of the machine to 25 per cent. of its former efficiency for these reasons. At double the velocity each grain of the flying sand will contain four times the energy of the same grain at the lower velocity, and, therefore, the total quantity of sand to which it can impart this veloc-

ity will be only one-quarter that to which it can impart the lower velocity. As at the lower velocity the sand has sufficient energy to do the work required of it, with greater energy it can do no more, and the extra energy imparted to it is only wasted.

OTHER SOURCES OF WASTE.

There is more slip, so to speak, between the sand and the impelling air at high than at low velocities. And at lower velocities the comparatively lower pressure air imparts more nearly its own velocity to the sand than the higher pressure air moving at a greater velocity. This can readily be seen when the machine, running without sand, at the lower pressures, say, at about 10 to 16 lb., has the sand turned on and the pressure rises some 25 to 30 per cent., or to 14 to 20 lb. Whereas, when the machine is running at about 80 lb. the rise of pressure is scarcely perceptible, not over 2 or 3 per cent., when the sand is turned on. No other kind of a machine that consumed 97 per cent. of its power load when running idle would be considered economical. These conclusions caused the low or moderate pressure machine to be developed. A long course of comparative experiments fully verified them before the machines were put on the market.

These conclusions are true of any type of sand blast machine, but with the flexible hose type are emphasized. The long flexible hose is always a source of loss of power for every time a grain of sand strikes the soft elastic lining of the hose it loses considerable of its velocity, which must be again imparted to it or it will finally come to rest and clog up the tube. For this reason the larger the diameter of the hose and the less the velocity of the mixed stream of sand and air passing through it, the less is this loss because the greater the ratio of cross section to wall area, and therefore the fewer the impacts of the sand grains with the walls, and also, owing to the low velocity, the less is the loss at each such impact.

As an illustration: Our No. 6 machine has a hose 2½ in. internal diameter. Through this hose 180 cu. ft. of free air compressed to 14 lb. passes per minute. When the sand is turned on this air carries with it about 35 lb. of sand per minute, and the pressure rises in discharging the same amount to about 20 lb. This mixed stream is discharged through a ⅝-in. nozzle. In comparison with this we quote from the catalogue of a high-pressure machine. A hose ¾ in. in diameter carries an unspecified amount of air at 80 lb., and discharges it through a nozzle of 3-16 in. in diameter. The increase of pressure when carrying sand would be practically imperceptible, and the amount carried could not possibly be more than 6 or 8 lb. per minute, probably much less. This is forced through a tube of only 0.09 the area of our hose with. It is easy to see, what a loss of velocity and wear on the tube from the fact that the machine will not work at all if the pressure is reduced very much below the specified 80 lb. When discharged the sand has not to exceed an efficiency, weight for weight, of more than one and one-fourth to at most one and one-half that of an equal weight of sand discharged from our machine, or a net cleaning power of at most one-third that of our machine at the same cost of air and a greatly increased cost for sand and hose, which the higher pressure wears out much more rapidly, and at a wage cost, if in each case one man handles one hose, of three times that called for by our machine. Including wages, air, sand and hose, this type of machine will cost nearly or quite six times as much per square foot of cleaning ordinary castings, forgings, &c., as our machine.

ENERGY WASTED MOVING AIR.

The economy of the high pressure and medium pressure machines may be compared in another way, which illustrates the inherent waste of the former class. The air discharged at a considerable velocity from the nozzles of either class of machine is itself of considerable weight—*i. e.*, about 1-13 lb. for each cubic foot of free air. Taking the machine discharging 180 cu. ft. of free air per minute, this air will weigh about 14 lb., and is discharged at practically the same velocity as the sand with which it is mixed. The force necessary to give velocity to the air is in itself without effect in sand blasting. Only the force which is imparted to the sand is useful. Evidently, therefore, a machine which discharges a mixture of 14 lb. of air and 30 lb. of sand per minute utilizes somewhat over 70 per cent. of the total force put into it in giving useful velocity to the sand it discharges, and wastes only somewhat less than 30 per cent. in incidentally imparting velocity to the air that is discharged along with it. Whereas, a machine that discharges the same weight of free air per minute at the higher pressure mixed with only 6 to 8 lb. of sand at a maximum, utilizes only 30 to 35 per cent. of the force in usefully throwing sand, and wastes some 65 to 70 per cent. of its force in uselessly throwing air at the same velocity. This is to say nothing of the fact mentioned above that at the higher pressures the sand does not so nearly attain the same velocity as the air in which it is mixed as it does at a lower pressure.

Another wasteful point about some of the highpressure machines is the fact that they use a very short nozzle. The higher the pressure and the greater the velocity sought to be imparted to the sand, the longer should be the nozzle through which the mixture passes, so that the air will have a longer time to act on the sand. The reason that this is not done is that at the higher velocities the wear of the flying sand is so destructive to the nozzles as to be more expensive, and, therefore, recourse is had to a short nozzle, thereby deliberately sacrificing economy and efficiency of action to secure a longer life to this part of the machine.

THE MINIMUM DESIRABLE PRESSURE.

One other point in regard to the proportioning of the velocity to the work to be done. One might readily imagine from the above reasoning that a still lower pressure would be still more economical. In general this is so, and for work like the depolishing of glass, where the removal of any of the substance is not desired, but only the roughening of the surface, where the effect will be produced at a very low velocity, it is most economical to use air pressures as low as about 1 lb. The reason being that at that pressure each grain of sand completes the work by striking the surface, and the same surface does not require another blow from another grain of sand. The same with cleaning of castings and forgings. At 10 to 20 lb. pressure, depending upon the nature of the sand or scale to be removed, each grain of sand cuts down to the clean metal, and the same spot does not require another blow to complete the work. If the blow were weaker, too weak to finish the work at each impact, so that a second and third blow were required to complete it, then the process would be less economical than when it is finished at one blow. Even this would not be so wasteful as making each blow several times as hard as is necessary to clean down to the metal each time it is struck. If this is done a great proportion of the force of the blows would be wasted on the clean metal beneath the sand and scale which you want to get rid of, instead of being practically all expended in removing the sand or scale which it is desired to remove. To put the comparison in a word, the use of the high pressure machines for this purpose is much like a proposition to use a heavy long-stroke pneumatic riveting hammer in place of a light, quick short-stroke hammer for work suitable for the latter.

TILGHMAN-BROOKSBANK SAND BLAST COMPANY.

PHILADELPHIA, PA., January 25, 1911.

The Detroit & Cleveland Navigation Company has accepted the bid of the Detroit Shipbuilding Company for the construction of a new steel passenger steamer to be called the City of Detroit, which will be the largest passenger steamer on the Great Lakes. The length over all will be 470 ft.; molded breadth, 55 ft.; breadth over guards, 93 ft.; molded depth, 22 ft.; steel construction throughout; approximate cost, $1,500,000. Elevator service will be provided. The new boat will be ready early in 1912, and will be placed on the Buffalo run.

The Public Service Commission has ordered the elimination of three grade crossings of the Erie Railroad Company in Jamestown, N. Y., requiring three steel bridges.

Pig Iron Production

A Slight Falling Off in January

More Furnaces Active February 1 and Output Increasing

The January pig iron statistics show that the total production of coke and anthracite iron last month was 1,759,326 gross tons, as against 1,777,817 tons in December. A good many furnaces which were banked on January 1 were started up soon after, and these together with furnaces which resumed last month after repairs made a total of 206 active on February 1, an increase of 17 in the month. The daily capacity active February 1 was 59,568 tons, or 2800 tons more than the daily average production in January. Production to-day is, therefore, at the rate of about 22,000,000 tons a year, including charcoal iron, while under the general banking of furnaces in the holiday time it fell to 19,700,000 tons.

Daily Rate of Production

The daily rate of production of coke and anthracite pig iron by months, beginning with January, 1910, is as follows:

Daily Rate of Pig Iron Production by Months.—Gross Tons.

	Steel works.	Merchant.	Total.
January, 1910	57,200	26,948	84,148
February	57,876	27,740	85,616
March	56,113	28,346	84,459
April	55,663	27,129	82,792
May	52,235	24,867	77,102
June	51,637	23,879	75,516
July	47,183	22,122	69,305
August	46,534	21,429	67,963
September	47,007	21,536	68,542
October	45,794	21,726	67,520
November	41,427	22,232	63,659
December	35,909	21,440	57,349
January, 1911	36,401	20,351	56,752

January Output by Districts

The table below gives the production of all coke and anthracite furnaces in January and the four months preceding:

Monthly Pig Iron Production.—Gross Tons.

	Sept. (30 days)	Oct. (31 days)	Nov. (30 days)	Dec. (31 days)	Jan. (31 days)
New York	148,999	147,894	142,610	142,674	136,519
New Jersey	18,773	19,115	18,284	15,437	12,027
Lehigh Valley	63,919	69,327	62,161	68,531	68,324
Schuylkill Val.	60,689	61,673	54,642	51,496	60,592
Lower Susquehanna and Lebanon Val.	53,750	54,072	50,370	51,888	43,942
Pittsburgh dis.	505,342	507,508	445,083	397,379	409,698
Shenango Val.	108,114	112,026	82,904	82,706	82,922
West. Penn	115,622	126,098	87,568	81,957	94,118
Md., Va. and Kentucky	68,398	67,926	58,772	59,945	56,424
Wheeling dis.	74,143	76,581	84,390	74,225	77,715
Mahoning Val.	201,986	202,667	180,717	162,349	174,318
Central and North. Ohio	111,958	117,902	108,599	112,662	127,579
Hocking Valley, Hanging Rock and S.W.Ohio	27,657	24,029	25,008	29,959	33,253
Mich.,Minn.,Mo., Wis.,Col.,Wash.	63,935	72,825	78,927	68,313	60,941
Chicago dis.	259,672	246,504	239,469	197,340	165,826
Alabama	148,755	160,077	165,512	154,025	128,188
Tenn., Georgia and Texas	24,563	26,897	24,764	26,961	26,340
Totals	2,056,275	2,093,121	1,909,780	1,777,817	1,759,326

The list of furnaces blown in between January 1 and February 1 (a good many of them after banking through the holiday) includes one Swede in the Schuylkill Valley, three Carrie, one Duquesne, one Lucy and two Edgar Thomson in the Pittsburgh district, one New Castle in the Shenango Valley, one Cambria (net—two in and one out) and Rebecca in western Pennsylvania, two Mingo and one Bellaire in the Wheeling district, two Ohio and Mattie in the Mahoning Valley, one Lorain and Upson in northern Ohio, Belfont in the Hanging Rock district, Madeline in the Chicago district, one Colorado at Pueblo, Missouri at St. Louis, the rebuilt Dayton in Tennessee (the other Dayton furnace blowing out).

Among furnaces blown out last month were one

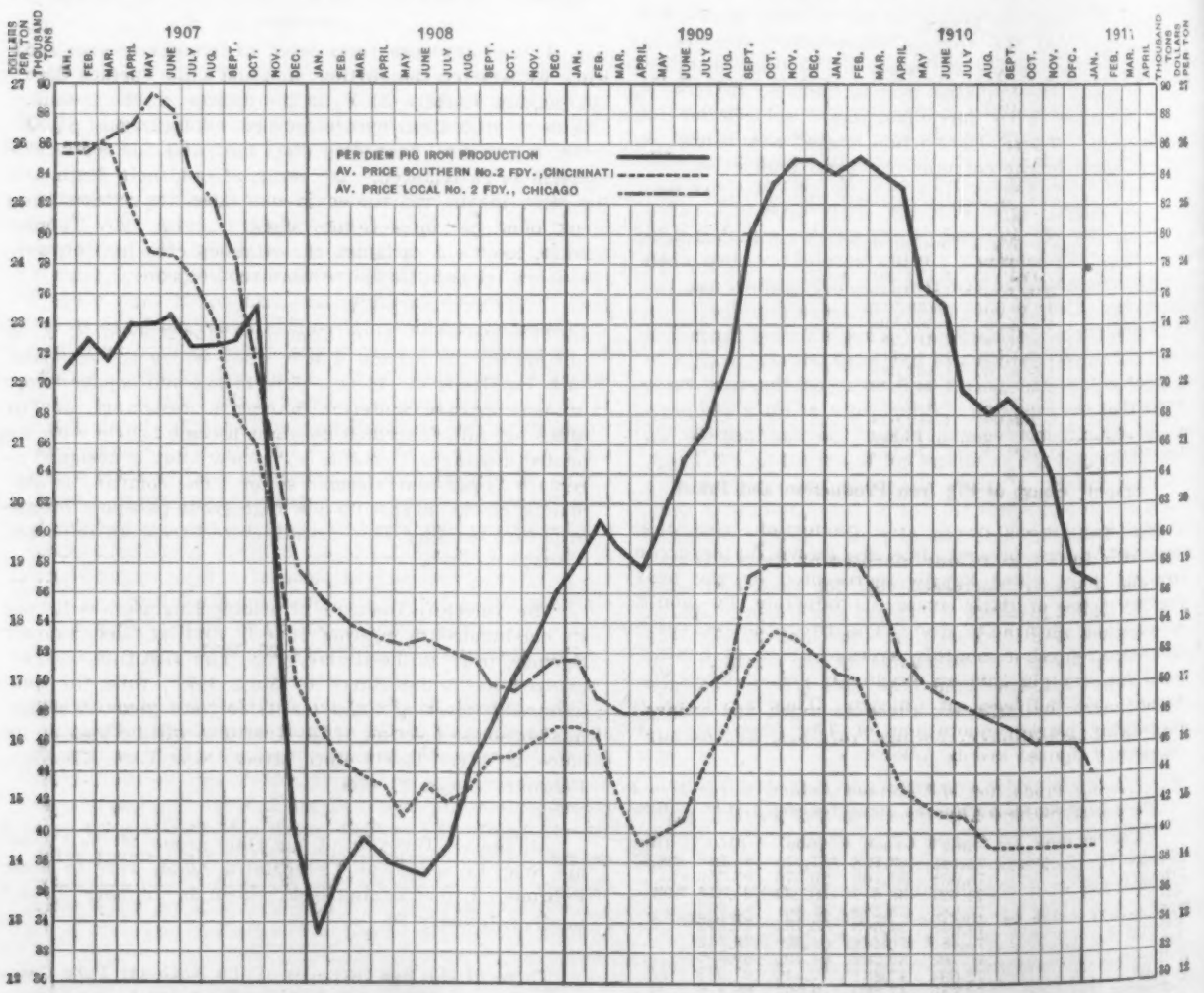

Diagram of Daily Average Production by Months of Coke and Anthracite Pig Iron in the United States from January 1, 1907, to February 1, 1911; Also of Monthly Average Prices of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry Iron Delivered at Chicago.

Aliquippa in the Pittsburgh district, Dunbar and Nittany in western Pennsylvania, one Calumet and one South Chicago in the Chicago district and Cumberland in Tennessee.

Capacity in Blast February 1 and January 1

The following table shows the daily capacity of furnaces in blast February 1 and January 1. These figures are based largely on the performance of the furnaces in the past two months:

Coke and Anthracite Furnaces in Blast and Capacity.—Gross Tons.

Location of furnaces.	Total number of stacks.	February 1. Number in blast.	February 1. Capacity per day.	January 1. Number in blast.	January 1. Capacity per day.
New York:					
Buffalo	17	12	3,931	12	4,034
Other New York	7	3	558	3	568
New Jersey	7	2	410	2	502
Spiegel	2	..	....	..	....
Pennsylvania:					
Lehigh Valley	23	11	2,110	11	2,062
Spiegel	3	1	95	1	84
Schuylkill Valley	16	7	1,965	6	1,660
Low. Susquehanna	7	4	705	4	690
Lebanon Valley	10	5	712	5	710
Pittsburgh district	50	35	14,215	29	11,890
Spiegel	3	1	130	1	134
Shenango Valley	20	9	2,997	8	2,541
Western Penn	27	11	2,990	11	2,763
Maryland	4	2	575	2	530
Wheeling district	14	8	2,850	5	1,725
Ohio:					
Mahoning Valley	23	18	6,240	15	5,286
Central and North.	22	12	4,244	10	3,455
Hocking Val., Hanging Rock and S. W. Ohio	15	8	1,120	7	910
Illinois and Indiana	32	13	5,208	13	5,605
Spiegel	2	..	....	1	175
Michigan, Wisconsin and Minnesota	10	5	1,058	5	1,104
Colorado, Missouri and Washington	7	4	1,185	2	708
The South:					
Virginia	23	8	906	8	893
Kentucky	5	2	340	2	320
Alabama	46	17	4,134	17	4,094
Tenn. and Georgia	20	8	890	9	904
Total	415	206	59,568	189	53,347

Production of Steel Companies

Returns from all plants of the United States Steel Corporation and the various independent steel companies show the following totals of product month by month. Only steel-making iron is included in these figures, together with ferromanganese, spiegeleisen and ferrosilicon. These last, while stated separately, are also included in the columns of "total production."

Production of Steel Companies.—Gross Tons.

	Pig.—Total production. 1909.	1910.	1911.	Spiegeleisen and ferromanganese. 1910.	1911.
January	1,117,823	1,773,201	1,128,448	19,538	8,360
February	1,073,363	1,620,539	.....	21,396	....
March	1,140,553	1,739,212	.....	25,591	....
April	1,093,092	1,669,898	.....	22,304	....
May	1,256,448	1,619,283	.....	26,529	....
June	1,365,527	1,549,112	.....	27,680	....
July	1,508,762	1,462,689	.....	22,924	....
August	1,591,991	1,442,572	.....	25,756	....
September	1,660,839	1,410,221	.....	15,151	....
October	1,769,094	1,419,624	.....	8,500	....
November	1,689,994	1,242,804	.....	9,032	....
December	1,768,799	1,113,174	.....	12,178	....

Graphic Chart of Pig Iron Production and Prices

The fluctuations in pig iron production from January, 1907, to the present time are shown in the accompanying chart. The figures represented by the heavy line are those of daily average production, by months, of coke and anthracite iron. The two other curves on the chart represent monthly average prices of Southern No. 2 foundry pig iron at Cincinnati and of local No. 2 foundry iron delivered at Chicago. They are based on the weekly market quotations of *The Iron Age*. The two sets of figures are as follows:

Daily Average Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.

	1907.	1908.	1909.	1910.	1911.
January	71,149	33,718	57,975	84,148	56,752
February	73,038	37,163	60,976	85,616	.....
March	71,821	39,619	59,232	84,459	.....
April	73,885	38,289	57,962	82,792	.....
May	74,048	37,603	60,753	77,102	.....
June	74,486	36,444	64,656	75,516	.....
July	72,763	39,257	67,793	69,305	.....
August	72,594	43,851	72,546	67,963	.....
September	72,783	47,300	79,507	68,476	.....
October	75,386	50,554	83,856	67,520	.....
November	60,937	52,595	84,917	68,659	.....
December	39,815	56,158	85,022	57,349	.....

Monthly Average Prices in Dollars of Southern No. 2 Foundry Iron at Cincinnati and Local No. 2 Foundry at Chicago Since January, 1907.

	1907. Sou. No. 2 Cin.	1907. Loc. No. 2 Chi.	1908. Sou. No. 2 Cin.	1908. Loc. No. 2 Chi.	1909. Sou. No. 2 Cin.	1909. Loc. No. 2 Chi.	1910. Sou. No. 2 Cin.	1910. Loc. No. 2 Chi.
Jan.	26.00	25.85	16.15	18.45	16.25	17.35	17.25	19.00
Feb.	26.00	25.85	15.75	18.16	16.13	16.75	17.06	19.00
March	26.00	26.10	15.50	17.85	15.05	16.50	16.30	18.30
April	25.06	26.35	15.20	17.75	14.25	16.50	15.37	17.50
May	24.25	26.85	14.75	17.63	14.50	16.50	15.00	17.06
June	24.10	26.60	15.25	17.73	14.70	16.50	14.85	16.75
July	23.85	25.55	15.00	17.55	15.75	17.00	14.75	16.56
Aug.	23.00	24.85	15.25	17.35	16.38	17.13	14.31	16.50
Sept.	21.50	24.10	15.65	17.05	17.35	18.70	14.25	16.40
Oct.	20.95	22.45	15.75	16.85	17.88	19.00	14.25	16.06
Nov.	19.50	20.66	16.00	17.10	17.75	19.00	14.25	16.00
Dec.	17.00	18.80	16.25	17.35	17.45	19.00	14.25	16.00
Jan., 1911	14.25	15.50	....	....	....	....	....	....

The Record of Production

Production of Coke and Anthracite Pig Iron in the United States by Months Since January 1, 1907.—Gross Tons.

	1907.	1908.	1909.	1910.
January	2,205,607	1,045,250	1,797,560	2,608,605
February	2,045,068	1,077,740	1,707,340	2,397,254
March	2,226,457	1,228,204	1,832,194	2,617,949
April	2,216,558	1,149,602	1,738,877	2,483,763
May	2,295,505	1,165,688	1,883,330	2,390,180
June	2,234,575	1,092,131	1,930,866	2,265,478
July	2,255,660	1,218,129	2,103,431	2,148,442
August	2,250,410	1,359,831	2,248,930	2,106,847
September	2,183,487	1,418,998	2,385,206	2,056,275
October	2,336,972	1,567,198	2,599,541	2,093,121
November	1,828,125	1,577,854	2,547,508	1,909,780
December	1,234,279	1,740,912	2,635,680	1,777,817
January, 1911	1,759,326	.....	.....	.....

The Westinghouse Electric & Mfg. Company, Pittsburgh, has closed a contract with the Universal Portland Cement Company for motors to operate its No. 6 plant at Buffington, Ind. The motors will be of the MS mill type, having characteristics specially suitable for cement mill work, and will operate on a 3-phase, 25-cycle, 440-volt circuit. The sizes range from 5 hp. to 200 hp., and the aggregate capacity is 11,500 hp. This will be the largest cement plant in the United States, having a daily capacity of approximately 12,000 barrels, and will be electrically operated throughout, the various drives being of the latest development for cement mill work..

Plans have been formulated and contracts signed for a complete reorganization of the E. R. Thomas Motor Company, Buffalo, N. Y., in the interest of the creditors. A new corporation will be formed, capitalized at $2,000,000, which will take over the plant and business. The creditors will receive 20 per cent. of their claims in cash, and the remainder in notes bearing interest and maturing not later than August 1, 1912. Mr. Thomas is to receive a satisfactory settlement for his interests and will remain in the reorganized company.

The Electrical Alloy Company, Morristown, N. J., is putting on the market a new alloy which the company calls its Grade C. It is a pure nickel and copper alloy, of noncorrosive material, having a resistance of 164 ohms per mil. ft., which does not become brittle with repeated heating and cooling. The new alloy is designed to replace 18 per cent. German silver. The company is also placing on the market its new high grade phosphor bronze armature bending wire, manufactured from an imported alloy.

The American Institute of Mining Engineers will hold its one-hundredth meeting June 6, 1911, at Glen Summit Springs, near Wilkes-Barre, Pa. The Institute was organized at Wilkes-Barre in May, 1871; thus the one-hundredth meeting comes in its fortieth year. The annual business meeting of the Institute will be held at its office, 29 West Thirty-ninth street, New York, Tuesday, February 21, at 11 a.m.

All the six furnaces of the Ohio group of the Carnegie Steel Company, at Youngstown, Ohio, were in blast February 1, one having been blown in January 9, and another January 26.

Three of the five furnaces of the National Tube Company, Lorain, Ohio, were in blast February 1, one having been blown in January 8.

The Iron and Metal Markets

A Comparison of Prices

Advances Over the Previous Week in Heavy Type, Declines in Italics.

At date, one week, one month and one year previous.

	Feb. 8, 1911.	Feb. 1, 1911.	Jan. 11, 1911.	Feb. 9, 1910.
PIG IRON, Per Gross Ton:				
Foundry No. 2, standard, Philadelphia	$15.50	$15.50	$15.50	$18.75
Foundry No. 2, Southern, Cincinnati	14.25	14.25	14.25	17.25
Foundry No. 2, Birmingham, Ala.	11.00	11.00	11.00	14.00
Foundry No. 2, local, Chicago	15.50	15.50	15.50	19.00
Basic, delivered, eastern Pa.	**14.50**	14.25	14.75	18.50
Basic, Valley furnace	**13.75**	13.25	13.25	16.50
Bessemer, Pittsburgh	15.90	15.90	15.90	19.65
Gray forge, Pittsburgh	14.15	14.15	14.15	17.15
Lake Superior charcoal, Chicago	17.50	17.50	18.00	19.50
BILLETS, &c., Per Gross Ton:				
Bessemer billets, Pittsburgh	23.00	23.00	23.00	27.50
Forging billets, Pittsburgh	28.00	28.00	28.00	32.00
Open hearth billets, Philadelphia	25.40	25.40	25.40	30.60
Wire rods, Pittsburgh	**29.00**	28.00	28.00	33.00
OLD MATERIAL, Per Gross Ton:				
Iron rails, Chicago	14.50	14.50	14.50	19.00
Iron rails, Philadelphia	17.00	17.00	17.00	20.00
Car wheels, Chicago	13.00	13.00	13.00	18.00
Car wheels, Philadelphia	13.00	13.00	13.00	16.75
Heavy steel scrap, Pittsburgh	**13.75**	13.50	13.50	17.50
Heavy steel scrap, Chicago	11.50	11.50	11.50	15.50
Heavy steel scrap, Philadelphia	**13.00**	12.50	12.50	16.50
FINISHED IRON AND STEEL, Per Pound:	Cents.	Cents.	Cents.	Cents.
Bessemer steel rails, heavy, at mill	1.25	1.25	1.25	1.25
Refined iron bars, Philadelphia	*1.29*	1.30	1.32½	1.60
Common iron bars, Chicago	1.30	1.30	1.30	1.60
Common iron bars, Pittsburgh	1.35	1.35	1.35	1.70
Steel bars, tidewater, New York	1.56	1.56	1.56	1.66
Steel bars, Pittsburgh	1.40	1.40	1.40	1.50
Tank plates, tidewater, New York	1.56	1.56	1.56	1.71
Tank plates, Pittsburgh	1.40	1.40	1.40	1.55
Beams, tidewater, New York	1.56	1.56	1.56	1.66
Beams, Pittsburgh	1.40	1.40	1.40	1.50
Angles, tidewater, New York	1.56	1.56	1.56	1.66
Angles, Pittsburgh	1.40	1.40	1.40	1.50
Skelp, grooved steel, Pittsburgh	1.30	1.30	1.25	1.50
Skelp, sheared steel, Pittsburgh	1.35	1.35	1.30	1.60
SHEETS, NAILS AND WIRE, Per Pound:	Cents.	Cents.	Cents.	Cents.
Sheets, black, No. 28, Pittsburgh	2.20	2.20	2.20	2.40
Wire nails, Pittsburgh*	1.75	1.75	1.70	1.85
Cut nails, Pittsburgh	1.60	1.60	1.60	1.80
Barb wire, galv., Pittsburgh*	2.05	2.05	2.00	2.15
METALS, Per Pound:	Cents.	Cents.	Cents.	Cents.
Lake copper, New York	12.75	12.75	12.75	13.75
Electrolytic copper, New York	12.37½	12.37½	12.50	13.50
Spelter, New York	*5.50*	5.55	5.55	6.12½
Spelter, St. Louis	*5.30*	5.40	5.40	5.87½
Lead, New York	*4.45*	4.50	4.50	4.70
Lead, St. Louis	*4.30*	4.32	4.35	4.55
Tin, New York	*40.12½*	42.75	40.25	32.60
Antimony, Hallett, New York	7.75	7.75	8.00	8.25
Tin plate, 100-lb. box, New York	$3.94	$3.84	$3.84	$3.84

* These prices are for largest lots to jobbers.

Prices of Finished Iron and Steel f.o.b. Pittsburgh

Freight rates from Pittsburgh in carloads, per 100 lb.: New York, 16c.; Philadelphia, 15c.; Boston, 18c.; Buffalo, 11c.; Cleveland, 10c.; Cincinnati, 15c.; Indianapolis, 17c.; Chicago, 18c.; St. Paul, 32c.; St. Louis, 22½c.; New Orleans, 30c.; Birmingham, Ala., 45c. Rates to the Pacific Coast are 80c. on plates, structural shapes and sheets, No. 11 and heavier; 85c. on sheets, Nos. 12 to 16; 95c. on sheets, No. 16 and lighter; 65c. on wrought boiler tubes.

Structural Material.—I-beams and channels, 3 to 15 in., inclusive, 1.40c. to 1.45c., net; I-beams over 15 in., 1.50c. to 1.55c., net; H-beams over 8 in., 1.55c. to 1.60c.; angles, 3 to 6 in., inclusive, ¼ in. and up, 1.40c. to 1.45c., net; angles over 6 in., 1.50c. to 1.55c., net; angles, 3 in., on one or both legs, less than ¼ in. thick, 1.45c., plus full extras as per steel bar card, effective September 1, 1909; tees, 3 in. and up, 1.45c., net; zees, 3 in. and up, 1.40c. to 1.45c., net; angles, channels and tees, under 3 in., 1.45c., base, plus full extras as per steel bar card of September 1, 1909; deck beams and bulb angles, 1.70c. to 1.75c., net; hand rail tees, 2.50c.; checkered and corrugated plates, 2.50c., net.

Plates.—Tank plates, ¼ in. thick, 6¼ in. up to 100 in. wide, 1.40c. to 1.45c., base. Following are stipulations prescribed by manufacturers, with extras to be added to base price (per pound) of plates:

Rectangular plates, tank steel or conforming to manufacturers' standard specifications for structural steel dated February 6, 1903, or equivalent, ¼-in. thick and over on thinnest edge, 100 in. wide and under, down to but not including 6 in. wide, are base.

Plates up to 72 in. wide, inclusive, ordered 10.2 lb. per square foot are considered ¼-in. plates. Plates over 72 in. wide must be ordered ¼-in. thick on edge, or not less than 11 lb. per square foot, to take base price. Plates over 72 in. wide ordered less than 11 lb. per square foot down to the weight of 3-16-in. take the price of 3-16-in.

Allowable overweight, whether plates are ordered to gauge or weight, to be governed by the standard specifications of the Association of American Steel Manufacturers.

Gauges under ¼-in. to and including 3-16-in. on thinnest edge	$0.10
Gauges under 3-16-in. to and including No. 8	.15
Gauges under No. 8 to and including No. 9	.25
Gauges under No. 9 to and including No. 10	.30
Gauges under No. 10 to and including No. 12	.40
Sketches (including all straight taper plates), 3 ft. and over in length	.10
Complete circles, 3 ft. in diameter and over	.20
Boiler and flange steel	.10
"A. B. M. A." and ordinary firebox steel	.50
Still bottom steel	.30
Marine steel	.40
Locomotive firebox steel	.50
Widths over 100 in. up to 110 in., inclusive	.05
Widths over 110 in. up to 115 in., inclusive	.10
Widths over 115 in. up to 120 in., inclusive	.15
Widths over 120 in. up to 125 in., inclusive	.25
Widths over 125 in. up to 130 in., inclusive	.50
Widths over 130 in	1.00
Cutting to lengths or diameters under 3 ft. to 2 ft., inclusive	.25
Cutting to lengths or diameters under 2 ft. to 1 ft., inclusive	.50
Cutting to lengths or diameters under 1 ft.	1.55

No charge for cutting rectangular plates to lengths 3 ft. and over.

TERMS.—Net cash 30 days.

Sheets.—Makers' prices for mill shipments on sheets in carload and larger lots, on which jobbers charge the usual discounts for small lots from store, are as follows: Blue annealed sheets, Nos. 3 to 8, U. S. standard gauge, 1.55c.; Nos. 9 and 10, 1.65c.; Nos. 11 and 12, 1.70c.; Nos. 13 and 14, 1.75c.; Nos. 15 and 16, 1.85c. One pass, cold rolled, box annealed sheets, Nos. 10 to 12, 1.85c.; Nos. 13 and 14, 1.90c.; Nos. 15 and 16, 1.95c.; Nos. 17 to 21, 2c.; Nos. 22, 23 and 24, 2.05c.; Nos. 25 and 26, 2.10c.; No. 27, 2.15c.; No. 28, 2.20c.; No. 29, 2.25c.; No. 30, 2.35c. Three pass cold roll sheets, box annealed, are as follows: Nos. 15 and 16, 2.05c.; Nos. 17 to 21, 2.10c.; Nos. 22 to 24, 2.15c.; Nos. 25 and 26, 2.20c.; No. 27, 2.25c.; No. 28, 2.30c.; No. 29, 2.35c.; No. 30, 2.45c. Galvanized sheets, Nos. 10 and 11, black sheet gauge, 2.20c.; Nos. 12, 13 and 14, 2.30c.; Nos. 15, 16 and 17, 2.45c.; Nos. 18 to 22, 2.60c.; Nos. 23 and 24, 2.70c.; Nos. 25 and 26, 2.90c.; No. 27, 3.05c.; No. 28, 3.20c.; No. 29, 3.30c.; No. 30, 3.50c. Painted roofing sheets, No. 28 ,$1.55 per square. Galvanized sheets, No. 28, $2.75 per square for 2½-in. corrugations. All above prices are f.o.b. Pittsburgh, terms 30 days net, or 2 per cent. cash discount 10 days from date of invoice.

Wrought Pipe.—The following are the jobbers' carload discounts on the Pittsburgh basing card on wrought pipe, in effect from October 1:

	Steel, Black.	Steel, Galv.	Iron, Black.	Iron, Galv.
Butt Weld.				
⅛, ¼, ⅜ in.	72	58	68	54
½ in.	75	63	71	59
¾ to 1½ in.	79	69	75	65
2 to 3 in.	80	70	76	66
Lap Weld.				
2 in.	76	66	72	62
2½ to 4 in.	78	68	74	64
4½ to 6 in.	77	67	73	63
7 to 12 in.	75	59	71	55
13 to 15 in.	51½	..	..	..
Butt Weld, extra strong, plain ends, card weights.				
⅛, ¼, ⅜ in.	69	59	65	55
½ in.	74	68	70	64
¾ to 1½ in.	78	72	74	68
2 to 3 in.	79	73	75	69
Lap Weld, extra strong, plain ends, card weight.				
2 in.	75	69	71	65
2½ to 4 in.	77	71	73	67
4½ to 6 in.	76	70	72	66
7 to 8 in.	69	59	65	55
9 to 12 in.	64	54	60	50
Butt Weld, double extra strong, plain ends, card weight.				
½ in.	64	58	60	54
¾ to 1½ in.	67	61	63	57
2 to 3 in.	69	63	65	59
Lap Weld, double extra strong, plain ends, card weight.				
2 in.	65	59	61	55
2½ to 4 in.	67	61	63	57
4½ to 6 in.	66	60	62	56
7 to 8 in.	59	49	55	45

THE IRON AND METAL MARKETS

		Plugged and Reamed.
1 to 1½, 2 to 3 in.	Butt Weld	Will be sold at two (2) points lower basing (higher price) than merchant or card weight pipe, Butt or Lap Weld as specified.
2, 2½ to 4 in.	Lap Weld	

The above discounts are for "card weight," subject to the usual variation of 5 per cent. Prices for less than carloads are three (3) points lower basing (higher price) than the above discounts.

Boiler Tubes.—Discounts on lap welded steel and charcoal iron boiler tubes to jobbers in carloads are as follows:

	Steel.	Iron.
1 to 1½ in.	49	43
1¾ to 2¼ in.	61	43
2½ in.	63	48
2¾ to 3 in.	69	55

2½ in. and smaller, over 18 ft., 10 per cent. net extra.
2¾ in. and larger, over 22 ft., 10 per cent. net extra.

Less than carloads to destinations east of the Mississippi River will be sold at delivered discounts for carloads lowered by two points, for lengths 22 ft. and under; longer lengths, f.o.b. Pittsburgh.

Wire Rods.—Bessemer, open hearth and chain rods, $29.

Steel Rivets.—Structural rivets, ¾ in. and larger, 1.90c., base; cone head boiler rivets, ¾ in. and larger, 2c., base; ⅝ in. and 11-16 in. take an advance of 15c., and ½ in. and 9-16 in. take an advance of 50c.; in lengths shorter than 1 in. also take an advance of 50c. Terms are 30 days, net cash, f.o.b. mill.

Pittsburgh

PARK BUILDING, February 8, 1911.—(*By Telegraph.*)

Pig Iron.—The elimination of a heretofore aggressive seller of basic pig iron, together with the generally improved conditions of business, has brought about a much stronger situation in that grade of pig iron, and the market to-day is higher by at least 50c. a ton than the prices of a week ago. One furnace interest claims that it was offered $14, at furnace, for 10,000 tons of basic for forward delivery and turned the business down. A Canton steel maker is in the market for 3000 tons of basic, and will have to pay higher prices than a week ago. A meeting of Valley furnacemen is to be held, probably next week, for the purpose of discussing the question of establishing a single selling agency for basic iron in the Pittsburgh district and nearby consuming points. The matter was fully discussed a month or more ago, but no action was taken at that time. Bessemer and foundry iron are quiet, but the whole pig iron market is decidedly firmer. We quote Bessemer pig iron, $15; malleable Bessemer, $13.75; basic, $13.75; No. 2 foundry, $13.75, and gray forge, $13.25, all at Valley furnace, the freight rate to the Pittsburgh district being 90c. a ton.

Steel.—For the first time in some months the Bessemer steel plants of the Carnegie Steel Company at Bellaire, Mingo Junction and Youngstown are in full operation this week. Consumers are specifying freely against their contracts for billets and sheet and tin bars. The steel market is now very firm, with more steel moving from the mills to consumers than had been the case in some months. We quote Bessemer and open hearth billets, 4 x 4 in. and up to, but not including, 10 x 10 in., at $23, base, and sheet and tin bars in 30-ft. lengths, $24, f.o.b. Pittsburgh or Youngstown, full freight to destination added. We quote 1½-in. billets at $24 and forging billets at $28, base, usual extras for sizes and carbons, f.o.b. Pittsburgh or Youngstown districts, freight to destination added.

Structural Material.—Reports that the Westinghouse Electric & Mfg. Company has placed contracts with the American Bridge Company for foundries Nos. 1 and 2 at Trafford City, Pa., involving about 3000 tons of steel, are denied by both concerns.

(*By Mail.*)

The improvement in the iron trade is not based on sentiment alone, as in January the rail and billet sales department of the Carnegie Steel Company received orders and specifications against contracts for 50,000 tons more than in December, and February promises to show an increase over last month. Other interests report similar conditions in their trade. The trade is decidedly more optimistic, the only weak spots being pig iron and coke, in which there has been an overproduction for some months.

Wire Rods.—Prices of rods are firmer, and we now quote Bessemer and open hearth rods at $29, Pittsburgh, which is an advance of about $1 a ton over previous prices. The capacity for making rods has, however, materially increased recently, by reason of the starting up of the new mill of the Jones & Laughlin Steel Company, to be followed this month by the new mill of the Cambria Steel Company, with an aggregate output of close to 700 tons of rods per day.

Ferromanganese.—Further weakness is shown, some very low prices having been made in this district in the past week or two by a New York importer. Sales of 80 per cent. foreign have been made as low as $37.50, Baltimore, in small lots for prompt shipment. The freight rate to Pittsburgh is $1.95 a ton. We note sales of two cars, or about 50 tons, for prompt delivery, at $37.50, Baltimore.

Ferrosilicon.—The market is fairly strong, and we note a sale of 50 tons of 50 per cent. for forward delivery on the basis of about $54.50, Pittsburgh. We quote 50 per cent. at $54.50 to $55, Pittsburgh, for delivery within the next three or four months. We quote 10 per cent. blast furnace silicon at $23; 11 per cent. $24 and 12 per cent. $25, f.o.b. cars, Jisco and Ashland furnaces.

Skelp.—Prices are decidedly firmer, and the few mills in this district that roll skelp are pretty well filled up for some time ahead. One local pipe mill has bought recently several round lots of grooved steel skelp as low as 1.25c., but makers report that the minimum price at which it can now be bought is 1.30c. A sale is reported of 1000 tons of narrow grooved steel skelp at 1.30c., for forward delivery. We quote grooved steel skelp at 1.30c., sheared steel skelp, 1.35c.; grooved iron skelp, 1.60c. to 1.65c., and sheared iron skelp, 1.70c. to 1.75c., all for delivery at consumers' mills in the Pittsburgh district, usual terms.

Muck Bar.—In the absence of sales, we quote muck bar nominally at $29, but a leading maker in this district states that he has been offered $30 for upward of 1000 tons for forward delivery.

Sheets.—A decided improvement is observed in the demand, while prices are being better maintained than for several months past. The increase in orders is not confined to one locality, but comes from all over the country. Most of the leading mills are operating from 60 to 70 per cent. of capacity, which is better than they were doing up to very recently. The full schedule of prices will be found on a previous page.

Tin Plate.—Effective February 3, the manufacturers announced an advance of 10c. per base box on 100 lb. cokes, and greater advances were made on some grades of terne plate and higher grades of tin plate. This advance was not unexpected, as the high price of pig tin has added materially to the cost of making tin plate. A further advance in the near future is not improbable. No advance was made on black plate for tinning. The new demand for tin plate is fairly heavy, while specifications on contracts are coming in very freely. The American Sheet & Tin Plate Company is operating this week to about 82 per cent. of capacity. The leading independent mills also report an increase in operations, and it is believed that the production will shortly be up to 90 per cent. or more of capacity. We now quote 100 lb. cokes at $3.70 per base box, f.o.b. Pittsburgh.

Steel Rails.—No important contracts for standard sections have been placed in the past week, but the Carnegie Steel Company reports orders for several small lots for early shipment. New orders and specifications for light rails received by this company are running at the rate of about 2000 tons per week, most of this business coming from the coal mining interests, but it is expected that about April 1 the lumber concerns will be in the market. The company's three rail mills at Bessemer, Pa., are now operating to larger capacity than for some time. Quotations on light rails are as follows: 12-lb. rails, 1.25c.; 16, 20 and 25 lb., 1.21c. to 1.25c.; 30 and 35 lb., 1.20c., and 40 and 45 lb., 1.16c. The prices are f.o.b. at mill, plus freight, and are the minimum of the market on carload lots, small lots being sold at a little higher price. We quote standard sections at 1.25c. per pound.

Structural Material.—Inquiries are decidedly better and considerable business has been placed in the past week. The Cambria Steel Company has taken 1000 tons of steel for a power house at Albany, N. Y.; 3000 tons for a viaduct for the Louisville & Nashville Railroad, at Louisville, Ky., and 500 tons of bridge work for the New York, New Haven & Hartford Railroad. The American Bridge Company has received a contract for a number of bridges for the National Railroad in Mexico—10,000 tons. The McClintic-Marshall Construction Company has a contract for some viaduct work for the Norfolk & Western Railroad, 2000 tons, and some areaways for the New York Central, 600 tons. Prices are firm and we continue to quote beams and channels up to 15-in. at 1.40c., Pittsburgh.

Plates.—The demand is much better. The Cambria Steel Company will furnish the plates and shapes for two new ore boats to be built by the Shenango Steamship Company, controlled by the Shenango Furnace Company of this city. The Jones & Laughlin Steel Company has taken about 3500 tons of shapes and plates for a new ore boat to be built by the American Shipbuilding Company, for the Wisconsin Steel Company, an identified interest of the International Harvester Company. New orders for cars have been light, but the local courts have finally granted per-

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mission to the Wabash-Pittsburgh Terminal Railway Company to build 1000 steel cars, and the Pennsylvania Railroad will build 1000 open gondola cars at its shops at Altoona, Pa. Prices on ¼ in. and heavier plates are firm at 1.40c., Pittsburgh.

Bars.—Specifications against contracts from the implement makers and the wagon builders are coming in at a fairly satisfactory rate, but the new demand for both iron and steel bars is quiet. Hard steel bars for reinforced concrete work are in lighter demand than for some time. We quote steel bars at 1.40c. and iron bars at 1.35c. to 1.40c., in carload and larger lots, f.o.b. Pittsburgh.

Hoops and Bands.—Some quite heavy contracts for steel bands have recently been placed, and one local mill has made a price of 1.35c. on some especially attractive business, plus the usual extras. The new demand for both hoops and bands is mostly in small lots to cover actual needs. Specifications against contracts for hoops are said to be coming in quite freely. We quote hoops at 1.50c. and bands at 1.40c., in carload and larger lots, the latter carrying extras as given in the steel bar card of September 1, 1909.

Spikes.—While the new demand for railroad spikes is light, several inquiries are in the market for round lots. The new prices on spikes, effective from February 1, are as follows:

Railroad Spikes.

4½, 5 and 5½ x 5/16	$1.55
3, 3½, 4, 4½ and 5 x ½	Extra .10
3½, 4 and 4½ x 7/16	Extra .20
3, 3½, 4 and 4½ x ⅝	Extra .30
2½ x ⅝	Extra .40
2½, 3 and 3½ x 5/16	Extra .60
2 x 5/16	Extra .80

Boat Spikes.

¾ in. square, 12 to 24 in. long	Extra .15
⅝ in. square, 8 to 16 in. long	Extra .15
½ in. square, 6 to 16 in. long	Extra .15
7/16 in. square, 6 to 12 in. long	Extra .20
⅝ in. square, 4 to 12 in. long	Extra .30
5/16 in. square, 4 to 8 in. long	Extra .45
¼ in. square, 4 to 8 in. long	Extra .75
¼ in. square, 3 to 3½ in. long	Extra 1.00

⅝ and 5/16 shorter than 4 in., ¼ cent extra.

Spelter.—The market is firmer, with more inquiry. We quote prime grades of Western spelter at 5.25c., East St. Louis, equal to 5.37½c., Pittsburgh.

Merchant Steel.—New orders and specifications against contracts in January showed a slight increase over December, and this month, so far, has been quite good.

Rivets.—The demand is mostly for small lots to cover actual needs and specifications against contracts are only fair. Regular prices are sometimes shaded for desirable orders.

Wire Products.—Buying of wire and wire nails is fair, but is still mostly in small lots. New orders and specifications for cut nails are reported as a little better. Prices are said to be firmly maintained. We quote galvanized barb wire at $2.05, painted $1.75, annealed fence wire $1.55, galvanized $1.85, wire nails $1.75 and cut nails $1.60, in carload and larger lots, all f.o.b. Pittsburgh, full freight to point of delivery added.

Merchant Pipe.—This is always the dull season in the pipe trade, new business being confined to small lots. Stocks throughout the country are said to be lighter than in a long time, which promises that when spring trade opens up the demand will be quite heavy. Some large projects for gas and oil lines are under way. Discounts are said to be quite well maintained.

Boiler Tubes.—Some fairly large inquiries are in the market for locomotive boiler tubes, but actual business being placed is only fair. The demand for iron tubes is reported as heavier than for some time, and the Tyler Pipe & Tube Company is operating its plant at Washington, Pa., on iron tubes to nearly full capacity. The demand for merchant tubes is dull and prices are more or less shaded.

Coke.—Owing to the starting up of additional blast furnaces of the United States Steel Corporation, the H. C. Frick Coke Company has recently fired 3000 additional ovens and is now operating to about 65 per cent. of its capacity. Prices are possibly a shade firmer, but low figures continue to be named on both furnace and foundry coke loaded on cars which must be moved. The output in the Upper and Lower Connellsville regions last week was 291,705 tons, an increase over the previous week of more than 4000 tons. We quote standard makes of furnace coke for spot shipment at $1.45 to $1.55 per net ton, at oven, while on contracts for delivery over the year from $1.70 to $1.75 is being quoted by some coke operators, while others, that are pretty well filled up, are holding their furnace coke firm at $1.90 to $2. at oven. Best makes of 72-hour foundry coke are being held at $2.10 to dealers and from $2.25 up to $2.50, at oven, to consumers.

Iron and Steel Scrap.—There is more disposition by consumers to take in scrap than for some time, but dealers believe that prices are soon going to be higher and are not willing to take contracts and trust to their ability to cover them. There is a better movement in steel scrap, and prices are about 25c. a ton higher. The mills are operating to slightly larger capacity and the consumption is heavier than for some time. Dealers now quote as follows, per gross ton, f.o.b. Pittsburgh, or elsewhere as stated:

Heavy steel scrap, Steubenville, Follansbee, Sharon, Monessen and Pittsburgh delivery	$13.75 to $14.00
No. 1 foundry cast	13.00 to 13.25
No. 2 foundry cast	12.00 to 12.25
Bundled sheet scrap, at point of shipment	10.00 to 10.25
Rerolling rails, Newark and Cambridge, Ohio, and Cumberland, Md.	14.75 to 15.00
No. 1 railroad malleable stock	12.75 to 13.00
Grate bars	10.75 to 11.00
Low phosphorus melting stock	17.00 to 17.25
Iron car axles	24.00 to 24.50
Steel car axles	20.25 to 20.50
Locomotive axles	24.00 to 24.50
No. 1 busheling scrap	12.25 to 12.50
No. 2 busheling scrap	8.75 to 9.00
Old car wheels	13.50 to 13.75
Sheet bar crop ends	15.75 to 16.00
Cast iron borings	8.00 to 8.10
Machine shop turnings	8.60 to 8.75
Old iron rails	16.00 to 16.25
No. 1 wrought scrap	14.50 to 14.75
Heavy steel axle turnings	10.25 to 10.50
Stove plate	10.75 to 11.00

Chicago

FISHER BUILDING, February 8, 1911.—(*By Telegraph.*)

The best news of the week is that the Illinois Steel Company is preparing to blow in three furnaces this week, two at the South Works and one at Joliet, and will bring in another at Gary next week. The Bessemer rail mill at South Chicago will be in operation again February 20. Current business shows improvement in all lines. Wire products have taken the lead and specifications are running in excess of mill capacity, with the prospect that delays in shipment may prove embarrassing in the hardware trade, as storms this week have demoralized railroad traffic. Enough rail business has been booked to operate the mills until other orders are received. The St. Paul road is on the point of closing for 60,000 tons of standard rails, and other good orders are in immediate prospect. Contracts for structural material are being let at a satisfactory rate, especially on the large tonnage of building work pending in Chicago. Current orders from the fabricating shops for mill material are reaching a good volume, both in structural shapes and plates. Specifications for steel bars are coming in better and the sheet business is slowly improving. Contracts have been let this week for extensive additions to the largest plant in the West for building steel freight cars.

Pig Iron.—All the large malleable foundries in the West have been asking for prices on malleable Bessemer iron for the last half of the year and in some cases they have offered to begin taking deliveries in April. A meeting of the malleable foundries is being held to-day to consider prices of castings and general trade conditions, as the largest customers of the foundries are in the market to make contracts for castings for the fiscal year beginning July 1. The furnace interests in this and Milwaukee territory are unwilling to sell the last half, excepting at a substantial advance over current quotations. An encouraging feature in the trade is that the malleable foundries are giving better shipping orders on old contracts, on which the iron has been held at the furnaces. The current demand from the gray iron foundries for small lots is improving and in the last few days has been equal to the daily production of the local furnaces. Several round lots of foundry have also been sold for forward delivery, on which details are not yet available. There are also better inquiries for Southern iron for prompt or near deliveries, and practically all of the high phosphorus iron that has been selling at concessions has disappeared from the market. The low grades are scarce in the South, as the pipe foundries have been quietly picking up a considerable tonnage on the basis of $10, Birmingham, for No. 4. A Northern pipe interest is in the market for analysis iron for delivery in Ohio. This interest bought 30,000 tons a year ago at this time, principally from Valley and southern Ohio furnaces. The following quotations are for February and March shipments:

Lake Superior charcoal	$17.50 to $18.00
Northern coke foundry, No. 1	16.00 to 16.50
Northern coke foundry, No. 2	15.50 to 16.00
Northern coke foundry, No. 3	15.25 to 15.75
Northern Scotch, No. 1	16.50 to 17.00
Southern coke, No. 1	15.85 to 16.35
Southern coke, No. 2	15.35 to 15.85
Southern coke, No. 3	15.10 to 15.60
Southern coke, No. 4	14.85 to 15.35
Southern coke, No. 1 soft	15.85 to 16.35
Southern coke, No. 2 soft	15.35 to 15.85
Southern gray forge	14.60 to 15.10
Southern mottled	14.60 to 15.10
Malleable Bessemer	15.50 to 16.00
Standard Bessemer	17.40 to 17.90
Jackson Co. and Kentucky silvery, 6%	17.90 to 18.40
Jackson Co. and Kentucky silvery, 8%	18.90 to 19.40
Jackson Co. and Kentucky silvery, 10%	19.90 to 20.40

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(*By Mail.*)

Billets.—A Milwaukee consumer is inquiring for 1000 tons of forging billets, and there is another inquiry pending for 500 tons. The leading interest continues to quote $31, base, Chicago, but independent mills are shading this price.

Rails and Track Supplies.—The Illinois Steel Company booked orders last week for about 40,000 tons of standard rails, including this company's allotment of the Pennsylvania rail business. Orders for track supplies are improving. We quote standard railroad spikes at 1.65c. to 1.75c., base; track bolts with square nuts, 2.15c. to 2.25c., base, all in carload lots, Chicago. Light rails, 40 to 45 lb., 1.16c. to 1.20½c.; 30 to 35 lb., 1.19½c. to 1.24c.; 16, 20 and 25 lb., 1.20½c. to 1.25c.; 12-lb., 1.25c. to 1.29½c., Chicago.

Structural Material.—New structural contracts are coming out steadily. The Northwestern Terra Cotta Company, Chicago, has let to the American Bridge Company about 1000 tons for plant construction. The Monroe Building, Chicago, 2714 tons, was let to the South Halsted Street Iron Works. The Western Steel Car & Foundry Company has let contracts requiring 1460 tons of steel for additions at shops at Hegewisch, Ill. The Chicago, Burlington & Quincy Railroad has let 2500 tons of bridge work, but the name of the successful bidder, supposed to be the Pennsylvania Steel Company, has not been announced. The Bon Marche Building, Seattle, Wash., 1443 tons, was let to the Vulcan Iron Works. Smelter construction at El Paso, Texas, 227 tons, was let to the Darbyshire-Harvie Foundry Company. The American Radiator Company's new building at Denver, Colo., a warehouse, has been changed to mill construction. A Chicago contractor is inquiring for 1200 tons of steel piling for a dam in Wisconsin, and there are other good current inquiries for structural material. We quote plain material from mill, 1.58c. to 1.63c., Chicago; from store, 1.80c. to 1.90c., Chicago.

Plates.—Specifications from the general trade are improving, but the railroads are slow in placing car orders which the plate mills need for full operation. The only important car business reported pending is for refrigerator cars. The Chicago, Burlington & Quincy is in the market for 500 of these cars with steel underframes, and a refrigerator line is figuring on 1500. We quote mill prices at 1.58c. to 1.63c., Chicago; store prices, 1.80c. to 1.90c., Chicago.

Sheets.—Business continues to improve and there is a better tone in the market, but current specifications only equal about half the capacity of the mills. We quote Chicago prices, carload lots, from mill: No. 28 black sheets, 2.38c.; No. 28 galvanized, 3.38c.; No. 10 blue annealed, 1.83c. Prices from store, Chicago, are: No. 10, 2.10c. to 2.20c.; No. 12, 2.15c. to 2.25c.; No. 28 black, 2.75c. to 2.85c.; No. 28 galvanized, 3.65c. to 3.75c.

Bars.—The bar business has been dragging behind other finished lines, but the season is opening for concrete business and there are several good inquiries pending, including one for 800 tons. Specifications from the agricultural trade are better. We quote as follows: Soft steel bars, 1.58c.; bar iron, 1.30c. to 1.35c.; hard steel bars rolled from old rails, 1.35c. to 1.40c., all Chicago. From store, soft steel bars, 1.80c. to 1.90c.

Wire Products.—The rush of business since the advance in prices last month is evenly distributed over all the important lines of wire. The railroads are closing good yearly fence contracts and their storekeepers are placing liberal orders for nails and other material. Jobbers' carload prices, which are quoted to manufacturing buyers, are as follows: Plain wire, No. 9 and coarser, base, 1.73c.; wire nails, 1.93c.; painted barb wire, 1.93c.; galvanized, 2.23c., all Chicago.

Merchant Steel.—The agricultural implement manufacturers appear to be doing more business this year than in their record breaking trade season a year ago. They began specifying early last summer for special grades of steel, but their requirements in harrow disks, rake teeth and other important lines have been even larger than was anticipated.

Cast Iron Pipe.—The city of Chicago has awarded 3500 tons of 36-in. and 48-in. water pipe to the United States Cast Iron Pipe & Foundry Company. The same interest was awarded 5000 tons of water pipe at Cincinnati last week. January bookings were better than for the same month a year ago and better than the average for January. Good lettings are also expected in February. On current business we quote, per net ton, Chicago, as follows: Water pipe, 4-in., $25; 6 to 12 in., $24; 16-in. and up, $23.50, with $1 extra for gas pipe.

Old Material.—The scrap market has developed a little strength in the past week for the first time in a long period. Cast scrap and locomotive tires are the only lines actually quoted higher than a week ago, but dealers are more confident on other grades and are not making concessions. Storms will prevent the movement of spot material this week, and this may improve quotations of scrap in transit. The prices quoted below are for delivery to buyers' works, all freight and switching charges paid. Sellers of scrap usually receive 50c. to $1 less in this district, owing to high switching charges. Following prices are per gross ton, delivered Chicago:

Old iron rails	$14.50 to $15.00
Old steel rails, rerolling	13.25 to 13.75
Old steel rails, less than 3 ft	12.50 to 13.00
Relaying rails, standard sections, subject to inspection	23.00 to 24.00
Old car wheels	13.00 to 13.50
Heavy melting steel scrap	11.50 to 12.00
Frogs, switches and guards, cut apart	11.50 to 12.00
Shoveling steel	11.00 to 11.50

The following quotations are per net ton:

Iron angles and splice bars	$13.00 to $13.50
Iron arch bars and transoms	14.50 to 15.00
Steel angle bars	11.00 to 11.50
Iron car axles	18.50 to 19.00
Steel car axles	17.50 to 18.00
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Steel knuckles and couplers	11.25 to 11.75
Locomotive tires, smooth	17.50 to 18.00
Steel axle turnings	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Cast and mixed borings	5.00 to 5.50
No. 1 busheling	9.25 to 9.75
No. 2 busheling	7.25 to 7.75
No. 1 boilers, cut to sheets and rings	8.00 to 8.50
Boiler punchings	13.00 to 13.50
No. 1 cast scrap	12.00 to 12.50
Stove plate and light cast scrap	10.25 to 10.75
Railroad malleable	10.75 to 11.25
Agricultural malleable	10.00 to 10.50
Pipes and flues	8.50 to 9.00

Philadelphia

PHILADELPHIA, PA., February 7, 1911.

The market is decidedly stronger, the sentimental feeling that better conditions were near at hand having been backed by increased buying and heavier specifications for finished materials. Consumers of crude materials have also entered the market more freely and would take further quantities for forward shipment if they could get them at present prices or in some instances at a slight advance. This is particularly noticeable in steel making brands of pig iron, for which makers in this territory have definitely marked up prices. Several producers have also withdrawn from the foundry iron market at the present price level. Generally speaking, the trade is of the opinion that we have made the turn and are now on the upward grade, and that the demand as well as prices of pig iron will show a gradual betterment. Finished material prices remain firm, and mills are booking better aggregate tonnages in plates, shapes, billets and steel bars. Refined iron bars, however, are not particularly strong. The old material market is stronger and shows a sharp stiffening in the prices of some grades. Holders of material are not inclined to sell at to-day's quotations. Coke remains quiet.

Iron Ore.—Further sales of Wabana ore to consumers in this district are reported, aggregating 50,000 tons, at 7⅝c. per unit, delivery during the current year. Negotiations for about a like tonnage are pending. It is reported that Spanish ore for 1911 shipment will be held at a higher figure, owing to the heavy demand abroad. No sales, however, are reported in this market. Importations at this port in the week ending February 4 aggregated 10,100 tons, valued at $27,775.

Pig Iron.—Consumers are showing decidedly more interest in the market and would place orders for moderate quantities for forward delivery if sellers would accept the business. This, however, the latter are unwilling to do and a number have withdrawn from the market at the present price level. The most important business in this territory has been in basic iron, an aggregate of 20,000 tons being sold at an advance over the recent low price. These transactions are all reported at $14.50, delivered, shipment to be made in the next 30 and 60 days. Negotiations for a further block of 5000 tons are pending, and it is stated that consumers have made offers for fair sized lots for delivery over the remainder of the first half at prices above those at which recent sales were made, but most producers have fixed on $15, delivered, as their price, either for prompt or near future delivery. In foundry irons a fair business has been done, but sellers are not disposed to load up order books at the present level, and one maker has advanced his price 50c. a ton, which virtually means that he has withdrawn from the market. Sales have been mostly in moderate lots, upward of a few hundred tons, for near future shipment. The movement in low grade iron has not been so heavy; one sale of 1000 tons of Northern iron at $14.25, delivered, to a Delaware River pipe works, is reported, with further business pending. Virginia foundry irons have been more active; in fact, the Virginia situation looks somewhat better. Stocks in January showed a decrease of about 3 per cent.,

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as compared with December, being the first time a decline has been reported for many months. While the leading producers maintain prices firmly, one or two still offer iron, not considered as standard grade, at a concession of 25c. One sale of about 1000 tons of Virginia low grade iron to a Virginia cast iron pipe maker for early delivery is reported. This was made at a low price, owing to its high sulphur content. Practically no movement in Southern iron is reported. The demand for forge iron is not active. One inquiry for 5000 tons of low phosphorus iron for extended delivery is reported; current sales of this grade, for delivery in this vicinity, however, have been light. While prices are firmer, and in some grades show an advancing tendency, the following range is named for standard brands for early shipment, delivered in buyers' yards in this vicinity:

Eastern Pennsylvania, No. 2 X foundry	$15.50 to $15.75
Eastern Pennsylvania, No. 2 plain	15.00 to 15.25
Virginia, No. 2 X foundry	15.80 to 16.00
Virginia, No. 2 plain	15.80 to 16.00
Gray forge	14.25
Basic	14.50 to 15.00
Standard low phosphorus	21.50 to 21.75

Ferromanganese.—The situation is unchanged. Little business is done and prices range from $37.75, Baltimore, for prompt, to $38.25 for second quarter and $38.50 for second half, but are not considered particularly strong at those levels.

Billets.—Orders have been coming out somewhat more freely. While a little forward business has been taken, the bulk of the orders are for small lots for prompt delivery. The aggregate, however, shows a little improvement. Prices are well maintained, $25.40 being quoted for open hearth rolling billets, delivered in this vicinity, while ordinary forging billets are quoted at $30.40, delivered.

Plates.—Eastern plate makers are more optimistic in their views regarding the situation. Specifications recently have been considerably heavier and there has been a very fair run of new business. Although the quantities required have not been individually large, they indicate increasing activity on the part of consumers. Some business in tank plates, which has been pending for a long time, has been placed, and a very satisfactory volume of business is coming from railroads, boilermakers, bridge and locomotive builders. Efforts to place contracts for future needs are again more pronounced, but Eastern mills are not particularly anxious for that class of business. Prices are firm, the minimum for ordinary plates, delivered in this territory, being maintained at 1.55c.

Structural Material.—Current orders continue small, although several fair quantities of shapes for building and bridge work are pending. The aggregate business coming to the mills in this district is somewhat larger, although orders continue, for the greater part, small individually. Prices continue firm at 1.55c. for plain shapes, delivered in this vicinity.

Sheets.—Business continues fairly active and, while the bulk of the orders received are for small lots for prompt shipment, some few larger orders for more extended delivery are reported. Mills continue actively engaged, although there is still but little business ahead on the majority of makers' order books. Prices are unchanged: Eastern mills naming the following range for early deliveries: Nos. 18 to 20, 2.50c.; Nos. 22 to 24, 2.60c.; Nos. 25 and 26, 2.70c.; No. 27, 2.80c.; No. 28, 2.90c.

Bars.—While a fair amount of moderate lot business comes out, both in steel and refined iron bars, the market for the latter is not particularly strong. Steel bars remain firm, at 1.55c., delivered here, but refined iron bars have been sold at 1.29c., delivered in this vicinity, although not all producers are willing to make that price and in instances hold at 1.39c., delivered; but the bulk of the business is done around the inside quotation.

Coke.—The movement is light, being confined closely to sales for prompt delivery. While some business in forward furnace coke has been under negotiation, sellers are not willing to accept orders covering any quantity for forward delivery at present prices; meanwhile consumers pick up odd lots for prompt and near future delivery at a low price, 1.45c. to 1.55c., at oven, being frequently done for such business. Foundry coke is quiet, small lots moving at unchanged prices. The following range of quotations about represents the market, per net ton, for near future delivery, in buyers' yards in this vicinity:

Connellsville furnace coke	$3.75 to $3.90
Foundry coke	4.23 to 4.50
Mountain furnace coke	3.35 to 3.50
Foundry coke	3.85 to 4.10

Old Material.—While there has been no urgent demand in this district, more buying is noted in some grades, usually at slightly higher prices. Sellers will not dispose of their accumulations, they state, even at prices somewhat above those quoted, particularly when they are able to move current offerings to points outside this district, where better prices are obtainable. Some consumers show more interest in the market, and higher prices than those recently quoted have been obtained for small lots of No. 1 heavy melting steel, $13.25, delivered, having been paid for a moderate quantity for early delivery. Old car wheels continue active, and the local locomotive builder is reported to have picked up in small lots an aggregate of 1500 to 2000 tons at a price ranging from $13.25 to $13.50, delivered. Rolling mill grades have been a little more active and slightly better prices for wrought pipe, turnings and borings are reported. Machinery cast scrap also shows a slight betterment. The following range about represents the market for deliveries in buyers' yards, eastern Pennsylvania and nearby points, carrying a freight rate from Philadelphia ranging from 45c. to $1.35 per gross ton:

No. 1 steel scrap	$13.00 to $13.50
Old steel rails, rerolling	15.00 to 15.50
Low phosphorus	17.50 to 18.00
Old steel axles	19.50 to 20.00*
Old iron axles	26.00 to 27.00*
Old iron rails	17.00 to 17.50
Old car wheels	13.25 to 13.75
No. 1 railroad wrought	15.50 to 16.00
Wrought iron pipe	13.00 to 13.50
No. 1 forge fire	11.50 to 12.00
No. 2 light iron	7.00 to 7.50*
Wrought turnings	9.00 to 9.50
Cast borings	8.50 to 9.00
Machinery cast	14.50 to 15.00
Railroad malleable	12.00 to 12.50
Grate bars	11.00 to 11.50
Stove plate	10.00 to 10.50

* Nominal.

Cincinnati

CINCINNATI, OHIO, February 8, 1911.—(*By Telegraph.*)

Pig Iron.—As far as this market is concerned, there is more confidence displayed both by the seller and consumer. However, sales continue to be confined principally to small tonnages for early shipment. An Indiana melter is said to have purchased 2000 tons of Northern No. 2 foundry, with some high silvery mixed in. The St. Louis territory contributed an order for 500 tons each of Northern foundry and malleable, and there have been numerous sales of Southern foundry in lots of 100 to 300 tons. An Ohio company bought 5000 tons of basic from a Valley furnace and for foundry iron the pipe makers have been excellent customers for Southern furnaces. The local order for 2000 tons of analysis iron has not yet been closed, but it is expected to be booked shortly. Nearby inquiries, in addition to small lots asked for, include 1000 tons of Southern No. 2 foundry. Consumers appear to be willing to cover for the third quarter and last half at prevailing prices, but the furnace interests will not now quote anything except prohibitive figures for that delivery. For the first half $11, Birmingham, for Southern and $14, Ironton, for Northern No. 2 foundry, rule, and there is a lessening possibility of getting these figures shaved for even spot shipment on iron not quite up to grade. Based on freight rates of $3.25 from Birmingham and $1.20 from Ironton, we quote, f.o.b. Cincinnati, as follows, for first quarter:

Southern coke, No. 1 foundry	$14.75
Southern coke, No. 2 foundry	14.25
Southern coke, No. 3 foundry	13.75
Southern coke, No. 4 foundry	13.50
Southern coke, No. 1 soft	14.75
Southern coke, No. 2 soft	14.25
Southern gray forge	13.00
Ohio silvery, 8 per cent. silicon	18.20
Lake Superior coke, No. 1	15.70
Lake Superior coke, No. 2	15.20
Lake Superior coke, No. 3	14.70
Standard Southern car wheel	25.25
Lake Superior car wheel	19.50

(*By Mail.*)

Coke.—There has been a little activity in foundry coke. During the past week a few contracts, calling for 1000 to 2000 tons each, were closed, deliveries to run through the remainder of this year, at prices ranging from $2.15 to $2.25 per net ton at oven. Practically all of this business went to the Wise County field. Foundry coke is obtainable in all three fields, for spot shipment, around $2 per net ton. Furnace coke remains stationary. In the Connellsville district it is obtainable at $1.50 for prompt delivery, with a premium of about 15c. per net ton for future shipment. Pocahontas and Wise County interests are holding out for $1.65 to $1.75 per net ton oven for either prompt or deferred shipment.

Finished Material.—Both structural material and steel bars are in better demand. There is also a good call for railroad track supplies. Prices are firm, and 1.40c., Pittsburgh, is the quotable mill figure on beams, channels and bars. Warehouse prices are from 1.75c. to 2c. The trade generally has about realized that the mills have no intention of cutting prices, and there is a steady increase in the amount of business placed.

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Old Material.—The market is dull and uninteresting, but prices are firm. No new railroad offerings have come out, and the two lots recently mentioned are understood to have been absorbed by different dealers. Prices for delivery in buyers' yards, southern Ohio and Cincinnati, are as follows:

No. 1 railroad wrought, net ton	$12.00 to $12.50
Cast borings, net ton	4.75 to 5.25
Steel turnings, net ton	6.00 to 6.50
No. 1 cast scrap, net ton	11.00 to 11.50
Burnt scrap, net ton	8.00 to 9.00
Old iron axles, net ton	17.50 to 18.50
Busheled sheet scrap, gross ton	8.50 to 9.00
Old iron rails, gross ton	14.50 to 15.50
Relaying rails, 50 lb. and up, gross ton	21.50 to 22.50
Old car wheels, gross ton	12.00 to 12.50
Heavy melting steel scrap, gross ton	11.00 to 11.50

Birmingham

BIRMINGHAM, ALA., February 6, 1911.

Pig Iron.—Quotations on shipments to cover the remainder of the first half have generally been made with reluctance, and for the reason that the $11, Birmingham, price could not be made to apply, the aggregate of tonnage sold during the past week is not as large as it could have been. It is now definitely known that two of the leading interests will not accept shipments over the remainder of the first half at $11, while two of the smaller concerns have practically withdrawn from the market. As far as can be ascertained, no prices have been named on shipments after July 1, notwithstanding the volume of inquiry recently received for such deliveries. The heavy demand for cast iron water pipe has been reflected in the negotiations of such manufacturers and the shortage of low grades which they require is more pronounced. The demand for silvery iron is such that premium prices are being asked, the tonnage available being offered subject to prior sale. A definite statement as to the aggregate of stocks in this district on February 1 is not available, owing to the delay in receiving reports from the several producers, but it is generally believed that a material reduction was made during January. The output of foundry grades was reduced the past week by the blowing out of an additional furnace, and no preparations are yet under way for resumption by stacks that have been idle for some months. The fact that one of the producing interests prefers remaining out of the market rather than to increase its output to take care of additional orders is essential. As a whole the situation is considered more encouraging than for some months, and it is generally believed that the indifference of producers as to additional commitments at the present status of prices is not unwarranted.

Cast Iron Pipe.—The tonnage placed with Southern producers within the past fortnight is well up into round figures, and the prospects for additional lettings are considered very good. Recent transactions consisted of several municipal contracts and an attractive aggregate of small orders for maintenance and extensions. This last mentioned is very encouraging to the producers as the average of prices received was considerably increased. The most important letting now in sight is 3000 tons of water pipe for the city of Minneapolis, Minn., upon which bids will be opened soon after February 15. The city of Los Angeles, Cal., is to place a contract for approximately 1500 tons of water pipe, but the date of the letting has not be announced. Several lots of 1000 to 2000 tons each are being held in abeyance to await the sale of municipal bonds, and as the demand for such bonds has recently improved materially the early placing of an attractive tonnage is expected. An advance in water pipe quotations is believed warranted and we quote revised prices as follows, per net ton, f.o.b. cars here: 4 to 6 in., $21; 8 to 12 in., $20; over 12 in., average $19, with $1 per ton extra for gas pipe. These quotations are probably subject to shading on large municipal contracts.

Old Material.—The demand continues to improve, and by reason of the recent heavy movement from local yards prices have been revised. It cannot be said that an advance in prices has actually taken effect, but the market is generally considered in a more satisfactory condition than for some months. We quote dealers' revised asking prices as follows, per gross ton, f.o.b. cars here:

Old iron axles	$14.00 to $14.50
Old iron rails	12.50 to 13.00
Old steel axles	12.50 to 13.00
No. 1 railroad wrought	12.00 to 12.50
No. 2 railroad wrought	9.50 to 10.00
No. 1 country wrought	8.00 to 8.50
No. 2 country wrought	7.50 to 8.00
No. 1 machinery	10.00 to 10.50
No. 1 steel	9.50 to 10.00
Tram car wheels	9.00 to 9.50
Standard car wheels	10.50 to 11.00
Light cast and stove plate	8.00 to 8.50

The furnace of the Silver Creek Furnace Company at Rome, Ga., has been blown out, owing to a temporary financial embarrassment of that company.

The plant of the Southern Foundry & Machine Company, Birmingham, which concern was recently adjudged a bankrupt, has been closed for an indefinite period.

Cleveland

CLEVELAND, OHIO, February 7, 1911.

Iron Ore.—No further reservations are reported and from present indications it will be some time before a buying movement sets in. The uncertainty regarding prices continues, that subject not yet having been taken up by the ore firms. It is practically certain that nothing will be done on the price question until consumers are ready to buy. A few weeks ago one furnace interest urged that the ore firms make the market more stable by fixing prices for five years or some other stated period, claiming that this would help conditions in the iron and steel industry. This proposal has caused some discussion, but it is not meeting the approval of the ore interests, being regarded by them as impractical. Ore shipments from the docks continue light. We quote prices as follows: Old Range Bessemer, $5; Mesaba Bessemer, $4.75; Old Range non-Bessemer, $4.20; Mesaba non-Bessemer, $4.

Pig Iron.—The United Steel Company, Canton, Ohio, is in the market for 3000 tons of basic—1000 tons for March and 2000 tons for April. In foundry grades the market in this territory continues dull. While a number of sales are reported, they are all for small lots. Local agencies are getting a little better volume of inquiries and orders from other districts. An Ohio pipe plant which sent out a large inquiry for the entire year several weeks ago is still in the market. Conditions continue generally quiet in the foundry trade and many consumers will defer making purchases until their orders improve. Prices are stationary. While some concessions have been made the local market is fairly firm at $14.25 for No. 2 foundry for Cleveland delivery for the first half. For outside shipment $13.75, at furnace, is the usual quotation, this price meeting that of the Valley furnaces. For prompt shipment and the first half we quote, delivered, Cleveland, as follows:

Bessemer	$15.90
Northern foundry, No. 1	14.50
Northern foundry, No. 2	14.25
Northern foundry, No. 3	14.00
Gray forge	14.00
Southern foundry, No. 2	15.35
Jackson Co. silvery, 8 per cent. silicon	19.00

Coke.—The only activity is in foundry coke, for which there is some demand for small lots. There is no inquiry for furnace grades. Prices are unchanged. We quote standard Connellsville furnace coke at $1.40 to $1.55 per net ton at oven for spot shipment, $1.60 to $1.65 for the first half and $1.75 to $1.80 for the entire year. Connellsville 72-hour foundry coke is held at $2 to $2.15 for spot shipment and $2.25 to $2.50 for the first half.

Finished Iron and Steel.—All mill agencies report a fair volume of small orders and specifications on contract. Not only is the improvement previously noted holding up, but the outlook is growing brighter. In the lake shipbuilding industry contracts have been placed in the past two weeks for six boats that will require about 17,000 tons of plates and structural material. The latest boat for which bids were received was a 470-ft. passenger boat, to be built for the Detroit & Cleveland Navigation Company by the Detroit Shipbuilding Company. The steel, about 1800 tons, will be furnished by the Carnegie Steel Company. New work in building lines is developing slowly and no good inquiries have come out, but a fair volume of specifications is coming from the fabricating shops and bridge companies. The Detroit Bridge & Steel Company has taken the contract for the Pingree building, Detroit, requiring 325 tons. The demand for plates shows some improvement, and prices are being maintained. Sheet prices are firm, with a fair demand. There is a better demand for forging billets than for some time, orders being mostly for 25 and 50 ton lots. The demand for shafting continues active. Wire orders are fairly plentiful. Some rail inquiries are pending for tonnages as yet undecided upon, and some of this business will probably be placed shortly. The demand for iron bars shows a slight improvement; we quote 1.30c. to 1.35c., Cleveland.

Old Material.—The feeling in the scrap trade shows considerable improvement. While business has picked up somewhat, the better sentiment is largely due to the expectation of an improved demand in the early future. Mills are taking some scrap on contract, but most consumers appear to have considerable stock on hand, and are holding back somewhat on shipments. Dealers are holding prices at the advance in quotations made last week, and do not appear anxious to sell. The New York Central Lines received bids February

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1 on about their usual tonnage. Dealers' prices per gross ton, f.o.b. Cleveland, are as follows:

Old steel rails	$14.00 to $14.50
Old iron rails	15.50 to 16.00
Steel car axles	19.00 to 19.50
Heavy melting steel	12.75 to 13.25
Old car wheels	12.50 to 13.00
Relaying rails, 50 lb. and over	22.50 to 23.50
Agricultural malleable	11.50 to 11.75
Railroad malleable	12.75 to 13.00
Light bundled sheet scrap	7.50 to 8.00

The following prices are per net ton, f.o.b., Cleveland:

Iron car axles	$21.00 to $21.50
Cast borings	6.50 to 6.75
Iron and steel turnings and drillings	7.00 to 7.25
Steel axle turnings	8.75 to 9.00
No. 1 busheling	11.00 to 11.50
No. 1 railroad wrought	12.00 to 12.50
No. 1 cast	12.00 to 12.50
Stove plate	10.00 to 10.50
Bundled tin scrap	11.00 to 11.50

A. L. and M. I. Goldstein of Joseph Nagusky & Co., Cleveland, Ohio, dealers in iron and steel scrap, have purchased the interests, including yards and equipment, of Joseph Nagusky and Max Kyman, and have succeeded to the business of that company, which will be conducted hereafter under the name of A. L. & M. I. Goldstein. The business is located at 855 East Sixty-seventh street.

St. Louis

ST. LOUIS, February 6, 1911.

The most encouraging feature of the situation is the gradual brightening of the prospect for a much larger volume of railroad buying. Railroads of the Middle West are out with inquiries for upward of 4000 cars. The new St. Louis & El Paso Railroad is in the market for most of its rail requirements. The leading steel interests state that not for many months have railroad specifications been coming in so freely. Inquiries are out for 12,000 to 15,000 tons of re-inforcing rods, and there is considerable inquiry for structural material for highway bridges. Manufacturing concerns are beginning to consider it not so much a question of price as of ability to contract for delivery to meet their requirements.

Pig Iron.—Most of the leading sellers report a better feeling in pig iron, with some increase in inquiry and, in case of some of the offices, a fair tonnage in sales. Merchant sellers, whose trade is widely scattered, state that their business for the month of January was the best since last October, mostly secured through their traveling salesmen. The principal transaction mentioned last week was the purchase by a local carbuilder of 3000 tons of malleable Bessemer, for shipment from February to June. Among the inquiries received by one of the leading houses were the following: 3000 tons of Southern No. 2 foundry, for the third quarter; 1000 tons of Northern and Southern No. 2 foundry, for the second quarter; 500 tons of Southern No. 2 foundry, for the second and third quarters; 600 tons of Southern No. 2 foundry, and 600 tons of malleable Bessemer, for the first half; 500 tons of Southern analysis iron, for the first half. The same house reports a sale of 500 tons of Southern No. 2 foundry, for the first half. Another leading broker closed a contract for 1000 tons, but gave no particulars. Other offices reported a fair demand for small lots only, but are in receipt of some urgent requests for shipment no contract. No change in the market is noted except possibly a slightly firmer undertone. We quote Southern No. 2 foundry, for shipment over the remainder of the first half, at $11, Birmingham. A premium of 25c. to 50c. is asked for second quarter only, delivery, and for prompt shipment $11 is shaded by some furnaces.

Coke.—There was more doing in coke. A leading broker reports a sale of 2000 tons of foundry coke, and an inquiry from another consumer for 1000 tons. Another leading seller mentions a sale of 30 cars of Connellsville foundry, for shipment over the remainder of the year. There is no improvement in the tone of the market, and prices are ruling the same as last quoted, $2 to $2.25 for standard 72-hr. Connellsville foundry per net ton, f.o.b. oven, with some special brands held higher.

Finished Iron and Steel.—The leading sellers report a decided improvement in the inquiry for structural material, both from local and outside sources. There is also a better demand from jobbers for bars, while the inquiry from wagon and agricultural implement manufacturers continues good. Railroad buying of bars, shapes, spikes, nuts and bolts is better, and the receipt of specifications on contracts is freer than for some time.

Old Material.—Dealers are talking more cheerfully respecting an increase in the demand from consumers in the near future, and in some items in the list—old iron rails and old steel rails—higher prices are asked both on account of present and prospective demand. Relaying rails are easier, owing to a let-up in the inquiry. The following railroad lists were closed out last week: Wabash Railroad, 500 tons; Missouri-Pacific, 2000 tons; St. Louis & San Francisco, 500 tons. The Vandalia Line will put 400 tons on the market next week. We quote dealers' prices, per gross ton, f.o.b. St. Louis:

Old iron rails	$13.50 to $14.00
Old steel rails, rerolling	12.50 to 13.00
Old steel rails, less than 3 ft.	12.00 to 12.50
Relaying rails, standard sections, subject to inspection	22.50 to 23.00
Old car wheels	12.50 to 13.00
Heavy melting steel scrap	11.50 to 12.00
Frogs, switches and guards, cut apart	11.50 to 12.00

The following quotations are per net ton:

Iron fish plates	$11.00 to $11.50
Iron car axles	18.50 to 19.00
Steel car axles	17.00 to 17.50
No. 1 railroad wrought	11.50 to 12.00
No. 2 railroad wrought	10.50 to 11.00
Railway springs	10.00 to 10.50
Locomotive tires, smooth	16.00 to 16.50
No. 1 dealers' forge	9.00 to 9.50
Mixed borings	4.50 to 5.00
No. 1 busheling	10.00 to 10.50
No. 1 boilers, cut to sheets and rings	8.00 to 8.50
No. 1 cast scrap	11.50 to 12.00
Stove plate and light cast scrap	9.00 to 9.50
Railroad malleable	8.50 to 9.00
Agricultural malleable	8.00 to 8.50
Pipes and flues	8.00 to 8.50
Railroad sheet and tank scrap	8.00 to 8.50
Railroad grate bars	8.00 to 8.50
Machine shop turnings	7.00 to 7.50

The Kewanee Boiler Company, Kewanee, Ill., has installed in the showrooms of its St. Louis branch, on Olive street, one of its new type of smokeless furnace boilers. It is 12 ft. long, 5 ft. high and weighs 5000 lb.

The money for the St. Louis & Kansas City Electric Railway has been subscribed, covering the construction of the line through to Columbia, 150 miles.

The city of St. Louis is advertising for bids for about 100,000 ft. of sewer pipe of different sizes, ranging from 6 to 27 in. in diameter. Sealed proposals will be received at the office of the Board of Public Improvements until 12 m. February 17.

The Arkansas Natural Gas Company proposes to build a pipe line from Caddo Parish, La., to Little Rock, Ark., and thence to Memphis, Tenn.

The German Iron Market

BERLIN, January 26, 1911.

Considerable uncertainty prevails as to the general outlook, owing chiefly to the clouded situation in the bar trade. A meeting of the bar interests was held last week for the purpose of taking steps toward the renewal of the price agreement, but no action was taken beyond adjourning over to a date in February. It is reported that all the leading companies are anxious to have the arrangement renewed, and there are pretty strong hopes that this result will be accomplished.

The Steel Works Union held its monthly meeting yesterday, the chief business on hand being to deal with certain petitions for increasing allotments and to fix prices for the June quarter. All petitions for larger allotments were summarily rejected. Business in semi-manufactured steel products for the next quarter was declared open at unchanged prices, but action in regard to structural goods was deferred to the February meeting. This latter decision was apparently dictated by the hope that within a month a considerable improvement in the building trade will take place and justify higher prices for structural shapes.

The usual monthly report given out by the Union yesterday says that the export business in semi-manufactured steel has been somewhat better since the beginning of the year, especially for the English market. Home requirements in this class of goods for the current quarter have already been about fully arranged for and specifications on orders are coming in at the normal rate. In heavy steel rails no change has occurred in home conditions, but the foreign market continues to send in good orders. Trade in grooved rails is quieter, as is usual at this season, but inquiries in hand indicate that business will be better than usual in the spring. Considerable export business in grooved rails has been taken recently, but concessions had to be made owing to sharp outside competition. Foreign business in light rails for mines is rather quieter, and it is also feeling the effects of sharp competition from foreign makers. Trade in structural shapes is more sluggish, this being the quiet season for beams, but the outlook for the spring is considered encouraging. The foreign sales of structural shapes by the Union in the nine months ended with December 31 showed an increase of 60,000 tons over the previous year.

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It is reported that both dealers and consumers are offering manufacturers of bars a consideration to be liberated from contracts previously made; they evidently hope to get better terms later on. This fact has made a bad impression in the general market. Another thing that throws a damper over the market is the continued weakness of iron and steel prices in Belgium. Reports from Charleroi of two days ago give a rather pessimistic view of conditions there. Pig iron prices are still falling. The cause is attributed to the increased quantities of iron sent into Belgium from Luxemburg; besides, several new furnaces have been blown in this month in Belgium. Belgium steel manufacturers continue to cut export prices, saying that they are compelled to do this on account of the sharp German competition, but plates are firm. Belgium's production of pig iron last year was 1,803,500 metric tons, a gain of 171,150 tons.

Germany's foreign trade in iron and steel in December scored record figures in exports, which reached 474,240 metric tons, and the excess of exports over imports, which was 424,000 tons, was also a record breaking figure. The export trade for the year 1910 reached a larger volume than ever before, amounting to 4,868,385 tons, as against 4,037,300 tons in 1909. Imports amounted to 560,622 tons, as compared with 458,541 tons in 1909. The iron and steel exports for the past two years are compared in the following table:

	Metric tons.	
	1909.	1910.
Pig iron	471,046	786,854
Scrap and old iron	173,692	146,602
Steel billets	474,853	494,400
Beams and angles	362,743	442,712
Bars, shaped	93,347	93,690
Bars, not shaped	332,038	403,637
Hoops and bands	118,654	110,887
Plates, thicker than 5 mm	224,678	253,446
Plates, thinner numbers	101,725	92,471
Wire, unpolished	212,287	233,200
Wire, polished	136,782	165,367
Wire nails	67,648	65,134
Piping	97,969	126,954
Steel rails	364,662	515,722
Ties and fish plates	121,742	162,990
Rolling material	66,300	70,493

A remarkable change has come over Germany's foreign trade in pig iron in 10 years. In 1900 imports amounted to 726,700 tons and exports to 129,400 tons, but by 1910 these figures were almost exactly reversed, exports rising to 786,800 tons, while imports dropped to 136,300 tons.

German locomotive shops are quite dissatisfied with the amount of new orders received recently. They had expected orders for 66 locomotives from Japan, but what they actually received was for only 24, a similar number having gone to American and a smaller order to English shops. French orders, which had been a regular feature of the trade for several years, have not materialized this year, France having arranged for all its requirements with English and Belgian works. Home orders are also disappointing.

Buffalo

BUFFALO, N. Y., February 7, 1911.

Pig Iron.—The tone of the market appears to be slightly better, with a fairly good tonnage of orders coming in. About 15,000 tons have been sold out of this district in the past week, principally foundry grades. This includes between 6000 and 7000 tons of No. 2 foundry for a radiator manufacturer, which is said to have been taken at a concession by one of the leading makers. One interest reports a number of good orders for foundry irons from New England points, with a considerable tonnage still under negotiation from the same section. Another reports a run of small lot inquiry, but that large tonnage inquiry has slackened. The demand for malleable and basic is rather light. Selling competition has been strong and at present each furnace is "a law unto itself" in the matter of prices. One or two interests state that they have withdrawn from meeting the low prices on current delivery, which have been in evidence recently, and will hold off for firmer prices, and all furnaces in the district are refraining from quoting for last half. For current and first half deliveries the following schedule represents the market as nearly as possible, f.o.b. Buffalo:

No. 1 X foundry	$14.25 to $14.75
No. 2 X foundry	13.75 to 14.25
No. 2 plain	13.50 to 14.25
No. 3 foundry	13.50 to 14.00
Gray forge	13.50 to 13.75
Malleable	14.00 to 14.50
Basic	14.50 to 15.00
Charcoal	17.25 to 17.75

Finished Iron and Steel.—The situation continues to improve and the feeling is pretty general that the bottom of the market has been reached. Orders for tin plate are being placed at the advanced price, buyers realizing that the improvement in the steel market, with pig tin remaining where it is or going higher, will cause a further advance. There is a little more pronounced activity in steel bars and most other lines are gaining. Canadian export business continues good, with brisk inquiry. Some inquiry is also noted in foreign trade lines aside from that from Canada, one interest reporting an inquiry for 2000 tons of plates for export from the Eastern coast. In fabricated structural material, present inquiry is slow, although work involving large tonnages for a number of local structures is now on architects' boards. Revised plans are being prepared for the Buffalo General Electric Company's office building, increasing the hight of a portion of the building to 20 stories instead of 14 stories. Revised plan bids are now being received on the Jerome Hotel at Erie, and bids are soon to be received on revised plans for the New York Central Station at Rochester, it having been definitely determined to proceed with construction.

Old Material.—A general betterment is observable in the situation as regards most lines of scrap, a little more active inquiry having developed during the week. Mills continue to take scrap on contracts without restriction, which in a measure has combined to cause some stiffening in prices. We quote as follows, per gross ton, f.o.b. Buffalo:

Heavy melting steel	$12.75 to $13.00
Low phosphorus steel	17.25 to 17.50
No. 1 railroad wrought	15.00 to 15.25
No. 1 railroad and machinery cast scrap	14.00 to 14.50
Old steel axles	19.00 to 20.00
Old iron axles	23.00 to 23.50
Old car wheels	14.50 to 14.75
Railroad malleable	13.25 to 13.75
Boiler plate	11.00 to 11.50
Locomotive grate bars	11.00 to 11.50
Pipe	10.25 to 10.75
Wrought iron and soft steel turnings	7.25 to 7.50
Clean cast borings	6.50 to 6.75

New York

NEW YORK, February 8, 1911.

Pig Iron.—The business of the past week in foundry iron was done chiefly in New England, but was not much even there. Sales have been made for delivery in the New York district in 200 and 300 ton lots, but there has been very little forward contracting. In New England, Buffalo furnaces have taken most of the business, their quotations still approximating $13.25 at furnace for No. 2 iron. Virginia furnaces are reported to be a little firmer in their ideas and for the first time in many months Virginia furnace stocks of pig iron showed a decrease in January. It amounted to about 3 per cent. One Wharton furnace has blown out in New Jersey, while Oxford furnace, which had being doing little for about two weeks owing to tuyere difficulties, is now making a normal output. Some local interest is shown in the sales of basic iron in eastern Pennsylvania and there is more figuring by steel makers in that section. We quote for tidewater delivery as follows: Northern No. 1 foundry $15.50 to $15.75; No. 2 X, $15 to $15.25; No. 2 plain, $14.50 to $14.75; Southern No. 1 foundry, $15.50 to $15.75; No. 2, $15 to $15.25.

Finished Iron and Steel.—Now that the improved conditions, which began about the middle of last month, show evidences of continuing, the mills are gradually reducing their per cent. of idle capacity. All lines generally are giving better reports. The steel bar trade reports better specifications, more new business and more inquiry in the last week than for the corresponding period of January, which is not remarkable considering that the first week of January was naturally quiet, but even the better returns that came in in the last two weeks of the previous month have been more than equaled in the past week. Inquiries now are for larger tonnages. Bar iron orders have been received in fair volume, but the improvement in this line is less evident. Plates and structural materials are also in good demand, although there are few specific large items. The Pennsylvania Steel Company will furnish the steel for the Vine street pier in Philadelphia, about 4000 tons. The award is expected within two or three days on the Cruikshank Building at Greenwich and Morton streets, New York City, for which about 3000 tons of steel will be required. As about 900 tons of this will be 15-in. beams, it is an exceedingly attractive proposition from the mill point of view, and there has been considerable competition for the order. No new inquiries of moment have come up this week in this territory. Prices are firm as follows: Plain structural material, plates and steel bars, 1.56c. to 1.61c., and bar iron, 1.35c. to 1.40c., all New York. Plain material from store, New York, 1.85c. to 1.95c.

Steel Rails.—The New Haven rail order, which has been reported to be 61,000 tons, may exceed that amount, reckoning the Maine Central tonnage in addition to that of the Boston & Maine. The Pennsylvania Steel Company gets about half the total, the remainder being divided between the Bethlehem Steel Company and the Lackawanna Steel Company. The Delaware, Lackawanna & Western is reported to have placed 23,000 tons, the bulk of it going to the Lackawanna Steel Company, while 2000 to 3000 tons is given to the Pennsylvania Steel Company. The Bangor & Aroostook

THE IRON AND METAL MARKETS

is in the market. In the past week the Illinois Steel Company has put on its books, including the New York Central order, 40,000 tons of Bessemer and 80,000 tons of open hearth rails. The Tennessee Company booked only 1500 tons, but negotiations are pending for sales to Southern roads.

Ferroalloys.—Dealers in New York have been bidding on 5000 tons of 50 per cent. ferrosilicon for delivery to the United States Steel Corporation, which asked for bids through the Carnegie Steel Company. It is understood that quotations were made at under $55, Pittsburgh. The market in ferromanganese is quiet, with quotations from $37.50 to $38, Baltimore.

Cast Iron Pipe.—The city of Worcester, Mass., opened bids on Tuesday on 2100 tons of water pipe. Danvers, Mass., also opened bids on 500 tons. The Fall River Water Works, Fall River, Mass., will open bids on 470 tons today. A number of smaller lettings are announced. Considerable private buying is still going on, and some of the Eastern foundries are now feeling quite comfortable, having much work booked for the spring months. Quotations are continued at $21.50 to $22 per net ton, tidewater, for carload lots of 6-in.

Old Material.—Dealers are taking a little more hopeful view of the situation and are demonstrating this by purchasing more freely for stock. Heavy steel scrap has only moved in small lots during the week. Rolling mill material has been in but slight demand. Business in old car wheels is fair. Cast scrap has been in quite good demand with further inquiries under consideration. Quotations per gross ton, New York and vicinity, are as follows:

Old girder and T rails for melting	$10.25 to $10.75
Heavy melting steel scrap	10.25 to 10.75
Relaying rails	20.50 to 21.50
Standard hammered iron car axles	22.00 to 23.00
Old steel car axles	16.00 to 16.50
No. 1 railroad wrought	12.75 to 13.75
Wrought iron track scrap	11.50 to 12.00
No. 1 yard wrought, long	11.50 to 12.00
No. 1 yard wrought, short	10.50 to 10.75
Light iron	5.00 to 5.50
Cast borings	6.00 to 6.50
Wrought turnings	6.00 to 6.50
Wrought pipe	10.25 to 10.75
Old car wheels	12.00 to 12.50
No. 1 heavy cast, broken up	12.00 to 12.50
Stove plate	9.50 to 10.00
Locomotive grate bars	9.00 to 9.50
Malleable cast	12.25 to 12.75

Metal Market

NEW YORK, February 8, 1911.

THE WEEK'S PRICES

Cents Per Pound for Early Delivery.

	Copper, New York.			Lead.		Spelter.	
Feb.	Lake.	Electrolytic.	Tin.	New York.	St. Louis.	New York.	St. Louis.
2	12.75	12.37½	42.35	4.50	4.32	5.50	5.27½
3	12.75	12.37½	41.30	4.50	4.32	5.50	5.27½
4	12.75	12.37½	41.40 to 41.65	4.50	4.32	5.50	5.30
6	12.75	12.37½	41.35	4.45	4.30	5.50	5.30
7	12.75	12.37½	40.85	4.45	4.30	5.50	5.30
8	12.75	12.37½	40.12½	4.45	4.30	5.50	5.30

It is generally believed that the tin syndicate abroad is liquidating its holdings, as the market is declining as sharply as it recently advanced. Copper is firmer than last week and has been selling fairly well. Lead is weaker. Spelter has a better tone.

Copper.—Notwithstanding the general expectation that the report of the Copper Producers' Association would show an increase in stocks, a fair amount of buying has been done. From all appearances, consumers consider the prevailing price a fair one. While there have been reports of some shading of the quotation on lake copper, it is certain that a number of prominent sellers have refused offers of business at less than 12.75c. The quotation on electrolytic copper was steady all week at 12.37½c. The report of the Copper Producers' Association, showing an increase in stocks of 20,409,295 lb., was made known in the trade too late to affect to-day's market, as the members of the association did not meet to pass on the report until 12 o'clock, and both dealers and consumers show a disposition to digest the figures before making any attempt to do business. The London market opened weak this morning, in anticipation of an unfavorable American report and in sympathy with the declining tin market. At the close of trading in London to-day spot copper was sold for £54 10s. and futures for £55 5s. The sales amounted to 400 tons of spot and 1000 tons of futures. The market closed steady.

Copper Averages.—The Waterbury average for January was 12.87 1-3c. The average price of electrolytic copper in New York for the month of January was 12.53⅛c. and the average price of lake was 12.81¼c.

Pig Tin.—In the face of a succession of sharp breaks in the London market, followed by a rapid decline here, consumers have been feverishly placing orders for tin for early delivery. Most of this trading was done February 2, 3 and 4, and those who placed orders were under the impression that the London syndicate was operating a decline with the view to buying in futures. When the market continued to slide off on Monday, the disgusted buyers quit placing orders and retired to await developments. It is now believed that the operators abroad have decided to let go and accordingly it is anybody's market. For the first time in many weeks there was good trading on a Saturday, when on February 4 some large orders were placed. It is estimated that fully 800 tons of spot and February tin were sold during those four days' trading, and now the immediate supply is so scarce that a purchase of 100 tons for early delivery would move the market up regardless of what might be done in London. As a matter of fact this market is not following the London movements so closely except when prices are made on tin for delivery in April and May. Since January 30 prices in London have declined £20 10s. and the market was decidedly weak this morning, when it opened £3 under yesterday's figures. The arrivals of tin in this country so far this month have been 1330 tons, while there are 1420 tons afloat, much of which is not due to arrive until late in the month. The London market closed to-day with spot tin selling at £181 15s. and futures at £181 10s. The sales amounted to 200 tons of spot and 1400 tons of futures. The market closed steady. Pig tin sold in New York to-day for 40.12½c.

Tin Plates.—Following the example of the leading interest, independent sellers of tin plate have withdrawn all concessions and advanced their quotations 10c. a box. While the advantage is due in a measure to the recent high price of pig tin, the fact that there is such a good demand that the mills are working nearer to normal capacity has a great deal to do with the higher price. The new price for 100-lb. coke plates is $3.94, New York. The foreign market has declined 1½d. in sympathy with the pig tin movement, and the quotation for tin plates at Swansea, Wales, is now 15s. per box.

Lead.—Lead is very easy, both here and in St. Louis, and outside sellers are freely offering it in New York at 4.45c. The change in price came on Saturday when the report from St. Louis told of offerings there at 4.30c., a reduction of 2 points. This market was under the control of the leading seller for several weeks and until last Monday, when the outside sellers began to make offerings at 4.45c.

Spelter.—After weakening last Friday and Saturday, spelter became somewhat firmer on Monday, but only in tone, as but few sales had been made. It is hard to explain the present condition of the market. There are so little stocks available for spot delivery in New York that the price here, which is usually 15 points higher than in St. Louis, is now 20 points higher for early delivery, and purchasers desiring carload lots find it to their advantage to place their business in St. Louis. Quotations in St. Louis to-day are 5.30c., while New York dealers are asking 5.50c.

Antimony.—Antimony is quiet and prices are unchanged from last week. It is firmly believed that the proposed deal to form a selling combination in Europe has fallen through. Hallett's is selling at 7.75c., Cookson's at 8.25c., and other brands at from 7.25c. to 7.50c.

Old Metals.—The demand from consumers continues light. Dealers' selling prices are nominally as follows:

	Cents.
Copper, heavy cut and crucible	12.00 to 12.25
Copper, heavy and wire	11.50 to 11.75
Copper, light and bottoms	10.75 to 11.00
Brass, heavy	8.00 to 8.25
Brass, light	6.75 to 7.00
Heavy machine composition	10.75 to 11.00
Clean brass turnings	7.75 to 8.00
Composition turnings	9.00 to 9.25
Lead, heavy	4.20 to 4.25
Lead, tea	3.95 to 4.00
Zinc scrap	4.25 to 4.30

Metals, Chicago, February 7.—There have been good purchases of copper by Western consumers the past week, and both casting copper and lake are a little firmer. The break in the London price of tin makes this market very uncertain. Spelter is dull, but Chicago buyers are not able to transact actual business at a price as low as St. Louis quotations. We quote Chicago prices as follows: Casting copper, 12⅝c.; lake, 12¾c. to 12⅞c., in carloads, for prompt shipment; small lots, ¼c. to ⅜c. higher; pig tin, carloads, 42c.; small lots, 44c.; lead, desilverized, 4.45c. to 4.50c., for 50-ton lots; corroding 4.70c. to 4.75c., for 50-ton lots; in carloads, 2½c. per 100 lb. higher; spelter, 4.40c. to 4.45c.; Cookson's antimony, 10¼c., and other grades, 9c. to 10c., in small lots; sheet zinc is $7.50, f.o.b. La Salle, in carloads of 600-lb. casks. On old metals we quote for less than carload lots: Copper wire, crucible shapes, 12¼c.; copper bottoms, 10c.; copper clips, 12c.; red brass, 10½c.; yellow brass, 9c.; lead pipe, 4⅜c.; zinc, 4¼c.; pewter No. 1, 20c.; tin foil, 34c.; block tin pipe, 37c.

Metals, St. Louis, February 6.—Lead is dull at 4.30c. to 4.35c.; spelter is quiet and held at 5.30c., both at East

St. Louis. Zinc ore is quoted at $38 to $41 per ton, Joplin base. Tin is quoted at 42.90c. per pound; antimony (Cookson's) unchanged at 8.60c.; lake copper steady at 13.05c.; electrolytic unchanged at 12.85c., all at St. Louis. The demand for finished metals was slower than was the case the previous week.

Notes on Prices

Rope.—The demand is not more than fair and comparatively few orders are for future delivery. The following quotations represent prices to the retail trade in the Eastern market for rope 7-16 in. in diameter and larger, with card advances for smaller sizes: Pure Manila of the highest grade, 8¾c. to 9¼c. per pound; second grade Manila, 7¾c. to 8¼c. per pound; hardware grade, 7¼c. to 7¾c. per pound; pure sisal of the highest grade, 6¾c. per pound; second grade, 6¼c. per pound; rove jute rope, ¼-in. and up, No. 1, 6½c. to 7c. per pound; No. 2, 6 to 6½c. per pound.

Linseed Oil.—The market continues strong at 94c. for Western raw in carload lots, and 95c. for either city or Western raw in five-barrel lots. Business is dull, as manufacturing consumers are holding off placing orders, awaiting market developments. The following quotations represent New York prices in five-barrel lots or more:

	Cents.
State, raw	95
City, raw	95

Oil in lots of less than 5 bbl., 1 cent advance per gallon.
Boiled oil, 1 cent advance per gallon over raw.

Naval Stores.—Buying is light, owing to high prices of turpentine, reflecting the Savannah market. The crop movement is about over, although some turpentine is being received, and it will probably be three months until the new crop comes in. New York turpentine quotations in five-barrel lots are as follows:

	Cents.
In oil barrels	89½
In machine barrels	90

Less than 5-bbl. lots, ½ cent advance per gallon.

Rosins are also firm on the basis of the Southern market and a fair demand in jobbing lots is reported at this point. On the basis of 280 lb. to the barrel, common to good strained is quoted at $6.75 and grade D at $7.35 in the New York market.

Iron and Industrial Stocks

NEW YORK, February 8, 1911.

The upward movement in stocks continued until Monday of this week, when its culmination appears to have occurred. A reaction then set in, carrying prices down to some extent. The range of prices on active iron and industrial stocks from Wednesday of last week to Tuesday of this week was as follows:

Allis-Chalm., com..	8 - 8½	Railway Spr., com.	35 - 38
Allis-Chalm., pref..	32 - 34	Railway Spr., pref.	98 - 99½
Beth. Steel, com...	32¼- 33⅞	Republic, com.....	34½- 35¼
Beth. Steel, pref...	62¼- 63½	Republic, pref.....	98 - 99¾
Can, com.....	9½- 10	Sloss, com.....	52½- 56¼
Can, pref.....	81 - 82¼	Pipe, com.....	17 - 18
Car & Fdry, com..	55 - 57½	Pipe, pref.....	54 - 56⅛
Car & Fdry, pref..118	-118½	U. S. Steel, com..	80 - 82⅛
Steel Foundries....	46 - 48⅞	U. S. Steel, pref...119¼-121⅞	
Colorado Fuel.....	35 - 36½	Westinghouse Elec.	68 - 70
General Electric...154	-155¼	Va. I., C. & C.....	59½- 59⅝
Gr. N. ore cert....	62¼- 63¾	Am. Ship, com....	75 - 79
Int. Harv., com...114¼-116¼		Am. Ship, pref.....112	
Int. Harv., pref...123½-124¼		Chi. Pneu. Tool...	46½- 49
Int. Pump, com...	40½- 42¼	Cambria Steel.....	44⅝- 45¾
Int. Pump, pref...	85 - 85½	Lake Sup. Corp....	29¼- 32
Locomotive, com...	41½- 42¾	Pa. Steel, pref.....106½	
Locomotive, pref...110	-110½	Warwick	10⅛
Nat. En. & St.,com.	17½- 17¾	Crucible St., com..	13½- 13½
Pittsburgh Steel, pref...101		Crucible St., pref..	79½- 81⅝
Pressed St., com...	34 - 36¼	Harb.-W. Ref., com.....	36
Pressed St., pref...	97⅜- 98½	Harb.-W. Ref., pref.....	95

The Pressed Steel Car Company has paid the last installment of its $500,000 first mortgage 5 per cent. gold notes. These notes have been paid off in installments of $500,000 annually, beginning February 1, 1902.

Dividends.—The Inland Steel Company has declared a regular quarterly dividend of 1¾ per cent., payable March 1, and an extra dividend of 3 per cent., payable May 1 to stock of record February 10.

The Interstate Commerce Commission has issued its first annual report on the statistics of express companies. This covers the year ending June 30, 1909. The gross receipts from operation of all the companies covered by this report for one year were $132,599,190. From this revenue the companies paid for "express privileges" $64,032,126, this representing chiefly the payments by express companies to railroads. The remainder, $68,567,064, is reported as the operating revenues of the companies; operating expenses were $56,273,055, leaving a net operating revenue of $12,294,009. The investment of the companies, in property and equipment, June 30, 1909, was $22,313,575.

The Carnegie Steel Company Relief Fund.—The ninth annual report, showing operations for 1910 of the Carnegie Relief Fund of the Carnegie Steel Company and its affiliated concerns has been made public by F. A. Wilmont, manager of the fund. It shows that during the year the amount dispensed was $216,869.60. Of this amount $17,777 was for accident benefits, $92,496.25 death benefits, and $106,596.35 pension allowances. The pension allowances were greater during 1910 than ever before. The death benefits were smaller than for six years, except 1909. Money paid out to the employees or their families of the Carnegie Steel Company totaled $114,935.35, twice as much as for any of the affiliated companies, the largest of which is the H. C. Frick Coke Company. The report shows that since the establishment of the fund, the beneficiaries have been as follows: Accidents, 7598; deaths, 1263; pensions, 885; total, 9746.

George B. Limbert & Co., Chicago, have let contracts for a new foundry at East Chicago, Ind., as an addition to the manufacturing plant of the company. The foundry building will be 60 x 240 ft., of brick, with steel truss roof. The plans provide for two cupolas of 25 tons daily capacity each, but only one cupola will be completed at present. The foundry will be equipped with molding machines and all modern improvements for foundry work. The product will be chiefly steamfitters' supplies. A pattern shop and storeroom will also be erected this spring, and other important extensions of the plant are contemplated. It is estimated that the buildings and equipment now under way will cost about $40,000.

The explosion of a carload of 25 tons of dynamite, which was being transferred from cars on a pier of the Jersey Central Railroad to a lighter in the Hudson River at Jersey City, on February 1, resulted in the probable death of 30 and injuring of at least 200. The killed and injured were mostly workmen on the lighter and on the pier. Hundreds were cut by falling glass in the Jersey Central Station and on the streets in lower New York City, and the damage to property in Jersey City and New York City, mainly broken plate glass windows, is estimated at over $500,000. The explosion was heard more than 20 miles away. The dynamite was owned by the Du Pont de Nemours Powder Company.

The plant of the Vulcan Foundry & Machine Company, at New Castle, Pa., is to be offered for sale by the sheriff in the near future to satisfy bondholders. It has been idle for about five years. The Lawrence Savings & Trust Company, New Castle, Pa., trustee for the bondholders, has filed papers to collect $30,000 due on a mortgage dated November 30, 1901. The total appraised value of the plant is $60,000, including the machinery, which is valued at $54,098, while the liabilities are $133,067. It is stated that New Castle parties may buy the plant and operate it.

The Garwood Electric Company, 149 Broadway, New York, whose works are at Garwood, N. J., has appointed Henry Widmer, 731 Union street, New Orleans, La., agent for the sale of its dynamos, motors, &c., in the State of Louisiana, southern half of Mississippi and the city of Mobile, Ala., and all territory within a radius of 50 miles of that city. It has also appointed Milton S. Nettleton, 29 College street, New Haven, Conn., its agent for the city of New Haven and surrounding territory.

The number of immigrants coming to the United States in 1910 was 1,071,885, which compares with 957,105 in 1909 and 410,319 in 1908. The number of non-immigrant aliens arriving on return from visits abroad was 151,588, making a total of 1,223,473 arrivals. The alien departures in the year amounted to 406,041, so that the net gain in population was 817,432. This compares with 802,672 in 1909 and 971,468 in 1907. In 1908 the arrivals were 557,585 and the departures 598,783, making a net loss for that year of 41,198.

Personal

Charles A. Schieren, Jr., of the Charles A. Schieren Company, manufacturer of leather belting, New York, sailed February 1 for Europe, where he will visit the company's agencies on the Continent.

George H. Wadsworth, for the past 15 years superintendent of the Falls Rivet & Machine Company, Cuyahoga Falls, Ohio, has resigned that position, and will on and after March 1 devote his entire time to the Wadsworth Core Machine & Equipment Company, Akron, Ohio. He has purchased all machinery, patterns, tools and interest from the Falls Clutch & Machinery Company, successor to the Falls Rivet & Machine Company for the manufacture of the Wadsworth core machine and equipment as manufactured by that company during the last seven years for him.

C. W. Whitney has resigned his position as contract manager of the Ransome Concrete Company, San Francisco, Cal., to take the position of general purchasing agent for what are known as the "Hammon properties," consisting principally of the Yuba Construction Company, Natomas Consolidated of California, Boston Machine Shop Company and Hammon Engineering Company, who have their main offices in the Alaska Commercial Building, San Francisco.

The Cleveland Drop Forging Company, Cleveland, Ohio, has secured the services of James H. Herron, who will take charge of the sales engineering and metallurgy department. He was formerly connected with the Detroit Steel Products Company in a similar capacity.

Frank P. Bassett, for several years superintendent of the blast furnace department of the Maryland Steel Company, at Sparrows Point, Md., has resigned, and will sever his connection with the company February 15. At a farewell banquet given by his friends and associates, he was presented with a handsome gold watch.

Lewis H. Morgan, who for many years was with the Pond Machine Tool Company, Plainfield, N. J., and afterward was superintendent and general manager of the Ridgway Machine Company, Ridgway, Pa., and is now retired, living at Whitewell, Nantwich, England, has been elected a member of the Institution of Mechanical Engineers, London. Mr. Morgan is a member of the American Society of Mechanical Engineers.

William B. Ogram, who for the past 10 years has been Buffalo manager for the American Bridge Company, has been appointed to the Philadelphia office of the same company as contracting manager for eastern Pennsylvania, with offices in the Pennsylvania Building. He assumed his new duties February 1, succeeding R. W. Bailey, transferred to the Pittsburgh office as division contracting manager. F. D. Rideout is the new contracting manager for Buffalo, western New York and northwestern Pennsylvania, with offices at 658 to 662 Ellicott Square Building, having been transferred from the home office at Pittsburgh with which he has been connected for a number of years.

Francis C. Holmes has been elected by the directors of the Plymouth Cordage Company, Plymouth, Mass., treasurer and general manager, to succeed his father, Gideon F. Holmes, deceased. The office of vice-president has been created, and B. Preston Clark has been elected to the position. Mr. Holmes assumes the management at practically the same age as did his father, who served the company for over 50 years. Mr. Clark is a director, and is a practical cordage man.

S. A. Carson, formerly connected with the sales department of J. K. Dimmick & Co., has become associated with Matlack & Bates, iron, steel, coal and coke merchants, Pennsylvania Building, Philadelphia, Pa.

John Birkinbine will deliver an address on "Early History of Ironmaking" at the regular monthly meeting of the Associated Foundry Foremen of Philadelphia and Vicinity, to be held at the Manufacturers' Club, Philadelphia, Pa., on the evening of February 14.

At the annual meeting of the Brown Hoisting Machinery Company, Cleveland, Ohio, February 1, Alexander C. Brown was elected a director to take the place of R. W. Hickox, who died during the year. No other changes were made.

William R. Timken, vice-president and treasurer of the Timken Roller Bearing Company, Canton, Ohio, has been elected president of the First National Bank in that city.

With the coming of President Farrell into the Finance Committee of the United States Steel Corporation, succeeding W. E. Corey, that committee is now composed of the following: E. H. Gary, George F. Baker, George W. Perkins, H. C. Frick, Henry Phipps, Norman B. Ream, J. Pierpont Morgan, Jr., James A. Farrell and P. A. B. Widener.

E. B. Blandy has been appointed pig iron sales manager for Pilling & Crane, Philadelphia, in the New York district, with offices at 71 Broadway. Mr. Blandy has had a long experience in the pig iron trade, representing Matthew Addy & Co. in New York for a number of years and later being Eastern sales representative of the Tennessee Coal, Iron & Railroad Company. Up to February 1 he was the Pittsburgh sales manager of the United Steel Company, Canton, Ohio.

R. K. Le Blond, president of the R. K. Le Blond Machine Tool Company, Cincinnati, Ohio, leaves this week for a vacation trip to Cuba, and will visit different points of interest on the island during his stay there.

Chairman E. H. Gary of the United States Steel Corporation has gone to Florida for a stay of two or three weeks.

Frank G. Bolles, for some time with the Allis-Chalmers Company, Milwaukee, has become connected with the Reliance Engineering & Equipment Company of that city.

W. H. McFadden has resigned as vice-president and general manager of Mackintosh, Hemphill & Co., Pittsburgh, to take effect March 1. The resignation has been accepted with regret by the directors. Mr. McFadden has been closely identified with the rolling mill industry for the past 25 years, having taken an active part in the construction and installation of many of the most important steel mills in the country. He will spend a few months in looking after his gas and oil interests and in traveling for his health.

Cecil A. Grenfell, M. P., of London, England, who came to this country representing British stockholders of the Southern Iron & Steel Company, has been made chairman of the Board of Directors, and will take charge of the company's affairs. Mr. Grenfell will remain here several months.

Wade A. Taylor, president of the Deforest Shee. & Tin Plate Company, Niles, Ohio, has been elected president of the Dollar Savings Bank of that city.

Kenneth Lean has been appointed superintendent of the shipping department of the Homestead Steel Works of the Carnegie Steel Company, Homestead, Pa., to succeed Charles Orchard, who was recently made transportation agent.

J. A. Henry, formerly purchasing agent of the Portsmouth Steel Company, Portsmouth, Ohio, has been placed in charge of the company's new office at Cincinnati. He has been succeeded as purchasing agent by Charles Simms, formerly paymaster.

John E. Patton, who has been active for the last two years in organizing and directing the affairs of the Continental Coal Corporation, as its vice-president and general manager, has severed his connection with that company, having been elected president of the Sewanee Fuel & Iron Company at a recent meeting of the Board of Directors of the latter company at its office in Chattanooga, Tenn. He has already assumed active charge of the business of the Sewanee Company.

A. L. Davis, assistant to the president of the American Bridge Company, has been appointed contracting manager of the Eastern Division, relieving C. W. Bryan of that work. The latter continues as chief engineer and will retain headquarters in New York.

The furnace of the Napier Iron Works, Napier, Tenn., will be blown in February 14.

Experience with Concrete Patterns

Joseph Leon Gobeille, general manager of the Gobeille Pattern Company, Niagara Falls, N. Y., addressed the Foundry Foremen's Association of Buffalo, January 31, on "The Molder of To-Day and the Pattern-Maker of the Future." He referred to the improved status of the iron molder in the past 15 years, attributing much of the molder's personal advancement to the trade journals and the spread of foundry literature, and not a little of it to the molding machine. He thought that the unions, instead of showing coldness and antagonism to the machine, should give it a warm welcome, and suggested also the organization of a junior or allied union of machine men and molders' helpers.

Passing to pattern-making, the speaker said that "the pattern-maker of the near future must be a master molder, carrying a molder's card," and that "he will make his forms in a liquid or at least a plastic material." Referring to his own experience in the use of material other than wood, Mr. Gobeille said:

"Something else besides wood must be adopted for patterns and I believe that it will be simple concrete, with some reinforcement, framing and bracing of steel and wood. I have been ridiculed so much in trade journals and elsewhere on account of this belief that I speak to you to-night with hesitancy, but nevertheless with supreme faith and confidence. I have tried it out in a small way only, because there has been no opportunity to do things on a larger scale. You foundry foremen will not accept patterns made thus, no matter what their merits or accuracy, because you are not used to seeing them about, and your molders put up a kick on them, but I am 'arriving.' Some of the greatest difficulties are being overcome, some in a most interesting manner.

"I give you one instance out of many: The new pattern composed of concrete (no two cubic inches of which will be of identical weight), steel, wood and some plaster and litharge, since it has no known or constant decimal of specific gravity, its weight when cast in metal is exceedingly difficult to predict. In the case of the ordinary wooden pattern of pine, the foundryman drops it on a scale, figures mentally the old Dr. Bryan formula of 16 to 1, and knows pretty nearly how much iron he will have to give up, and waste, to fill the contract. The new era pattern is a question of measurement; even so its metallic weight can be closely approximated. But it involves plane and solid geometry, triangulation and sometimes right smart of mathematics and accuracy with the pencil stub. So the concrete-mix pattern was taboo.

"We took a tip from Archimedes and weighed the patterns ourselves without any scales. We made a square tank (also concrete) of known superficial area and filled it half full of water; then we rigged a float with a vertical bar and an easy toggle, to a dial, which was marked in pounds of iron. We knew the decimal for the specific gravity of cast iron per cubic inch. So we submerged the composite concrete in the tank, while the float rising actuated the pointer on the dial. The displacement of water in cubic inches was translated into pounds on this dial—no figuring, no mistakes, no brains, fool-proof.

"The prediction of weight in iron, no matter what the pattern was made of, is simply foolish in its dumb accuracy; so that one foundryman complained loudly because one of our guesses had varied 4 lb. from the actual casting in a lump weighing 128 lb., not realizing that we knew as well as he that any molder could change weights that much either way by over or under ramming any pattern of its size.

"So this is my preachment, my final word: Help along the concrete pattern, thereby improving the status of your craft and aiding at the same time in the conservation of our forests, so that we may do our part to leave a few trees for our posterity."

The Crane Company, Chicago, has increased its capital stock from $13,000,000 to $17,000,000, to provide for its rapidly increasing business.

The Warner Iron Company has blown out its furnace at Cumberland Furnace P. O., Tenn.

The Otto Gas Engine Works

At a recent meeting of the stockholders of the Otto Gas Engine Works, Philadelphia, Pa., the management was changed. The personnel of the new board of officers, consisting of Frank Salomon, president and general manager; Erich Krell, vice-president and treasurer, and E. A. Fisher, secretary, bids fair to carry out the programme of enlarging this enterprise, which represents the pioneer efforts in this country of building the best known internal combustion engine in a highly successful manner. Mr. Salomon is very widely known and ranks among men foremost in the handling of machinery, particularly in the direction of gas, gasoline and crude oil engines. L. V. Goebbels has been retained as engineer in charge of the technical department.

The company contemplates the building of engines operating on crude oil and similar fuels on a large scale. The original builder of the Otto engine abroad, the Gasmotoren-Fabrik Deutz, Cologne, Germany, of which the Philadelphia company is the United States branch, has been for many years most successful in producing economical and reliable crude oil engines, and its experience in this line would appear to guarantee the placing on the American market of a first-class oil engine. In addition to its Philadelphia plant, the Otto Gas Engine Works owns a tract of 90 acres near Wilmington, Del., which it acquired with the object of erecting a modern plant for the manufacture of large gas and crude oil engines.

Records kept by the Pennsylvania Railroad Company of the time consumed in changing from electric to steam motive power, and vice versa, at Manhattan Transfer station, near Harrison, N. J., show that 98 per cent. of the trains now go through the transfer in the time alloted for the change of power, which is 4 min. for uncoupling, switching and coupling. From 106 to 109 trains pass through the transfer on week days. Nowhere else is a rapid change from steam to electric engines made on so large a volume of traffic. Owing to the difficulty of detaching the steam hose from the engine in cold weather, it has not been thought advisable to make a shorter time allowance during the winter months. Thus far the record for the change is 1 min. 30 sec.

Rathbone, Sard & Co., manufacturers of stoves, at Albany, N. Y., and Aurora, Ill., elected the following officers at the recent annual meeting: President and general manager, Grange Sard, Albany; first vice-president, Edward Bowditch, Albany; second vice-president and Aurora manager, Edmond Raftery, Aurora; treasurer and assistant general manager, Russell E. Sard, Albany; secretary, A. M. Blanchard, Albany; assistant secretary, A. I. Hennessy, Albany; manager of gas department, John J. Garrison, Albany; assistant manager at Aurora, W. R. Yendall, Jr.; assistant treasurer at Aurora, C. W. Reid.

The Pittsburgh Rivet Company, Pittsburgh, Pa., manufacturer of boiler, ship, tank and structural rivets, machine, bridge and foundation bolts and special forgings, is sending out a hanger on which is given a table showing the estimated weight per 100 of cone and button head rivets in different lengths. The table will be of value to users of bolts and rivets.

Only three of the 19 furnaces of the Illinois Steel Company were in blast February 1, these being one Joliet and two South Chicago. At the Gary plant of the Indiana Steel Company three furnaces were in blast February 1.

The Cambria Steel Company, Johnstown, Pa., blew in one furnace January 11, and another January 12. On January 31 it blew out a furnace, leaving five active out of eight, February 1.

Rebecca Furnace of the Kittanning Iron & Steel Company, Kittanning, Pa., was blown in February 1, having been out since May, 1910, undergoing repairs.

Greater Activity at Youngstown, Ohio

Considerable improvement is noted this week in operations of the mills in the Youngstown district. Machine shops and foundries report more inquiries and a slight increase in orders. All the plant of the Youngstown Sheet & Tube Company is now in operation except six sheet mills, which are being overhauled and the fuel changed from gas to coal. At the Ohio Works of the Carnegie Steel Company six blast furnaces are in operation, the Bessemer department is running nearly full, the open hearth department to nearly 60 per cent., and the Union mills about four days a week. At the Brown-Bonnell Works of the Republic Iron & Steel Company all departments are now in operation except the No. 3 bar mill and the old 10-in. mill. At the Mahoning Valley Works of the same company the old puddle mill, 7-in. mill and shafting works started up on Monday, with prospects of additional mills resuming later in the week.

Geo. J. Hagan, People's Bank, Pittsburgh, sole licensee for the Bailey combination sheet and pair furnace, has received orders for two additional furnaces for the Canton Sheet Steel Company, Canton, Ohio, to be of the single type, stoker fired. The work has just been completed on three more combination sheet and pair furnaces for the Berger Mfg. Company, Canton, Ohio, constituting the sixth order received from this company. The Youngstown Sheet & Tube Company, Youngstown, Ohio, is putting in more furnaces of the Bailey combination sheet and pair type. Mr. Hagan is at present engaged on considerable construction work for the American Rolling Mill Company, Middletown, Ohio.

W. N. Kratzer & Co., structural steel fabricators, Pittsburgh, have considerable work at present, among which are steel lock gates for lock No. 1 in the Monongahela River, and a number of steel bear traps for dam No. 26 on the Ohio River. They are finishing a large contract for structural steel work for the Union Station in Baltimore, Md., secured some time ago; are furnishing the structural steel and erecting a new station for the Pennsylvania Railroad at Greensburg, Pa., and recently completed steel coal tipples, an engine house, boiler house and coal bins for the Pennsylvania Coal & Coke Company at Cresson, Pa. They are running their shops full time.

The contract for the erection of a new office building for the Republic Iron & Steel Company, at Youngstown, Ohio, has been given to the George A. Fuller Construction Company of New York and Chicago. The building will be six stories high and of brick and concrete fireproof construction. It is expected to be ready for occupancy about August 1, at which time the general offices of the company will be removed there from Pittsburgh. A district sales office for the Pittsburgh territory will be maintained in the Oliver Building.

A new corporation to be known as the Studebaker Corporation, which will be chartered with an authorized capitalization of $45,000,000, is to take over the wagon works of Studebaker Brothers, at South Bend, Ind., and the automobile manufacturing plants of the Everett-Metzgers-Flanders Company, which the Studebaker firm bought a year ago. The capital of the new company will consist of $15,000,000 7 per cent. cumulative preferred stock and $30,000,000 common stock. Control of the new corporation will remain in the hands of the Studebaker people through the ownership of the common stock.

The Champion Rivet Company, Cleveland, Ohio, manufacturer of Victor boiler rivets, announces that it has appointed as its exclusive Pacific Coast agents A. M. Castle & Co. of Chicago, Ill., represented on the coast by R. L. Sanford, 841 Monadnock Building, San Francisco, Cal., and A. H. Castle, 430 Citizens' National Bank Building, Los Angeles, Cal. The company calls attention to the fact that as it carries over 50,000 kegs of rivets always in stock, it can be depended upon for immediate shipment of any orders.

The Newark Foundrymen's Association, Newark, N. J., held its regular meeting February 1, and after enjoying a dinner discussed the question of extending the scope of the organization. A resolution was passed requesting the Executive Committee to prepare suggestions to be presented at the next meeting, providing for changes in the by-laws, so that the association can take in members from other parts of the State. A short discussion took place over the keeping of cost records.

The Fort Pitt Forge Company, Pittsburgh, Pa., manufacturer of heavy foundation and building bolts, structural and boiler rivets, has been taken over by the Pittsburgh Screw & Bolt Company, the two concerns having been closely identified in the past, and in the future it will be operated as the Fort Pitt Forge Department of the Pittsburgh Screw & Bolt Company. William G. Costin is president and Thomas W. Smith is vice-president and treasurer.

The Union Furnace Company, Ironton, Ohio, held its annual meeting in Cincinnati, January 31. The following directors were elected: D. B. Meacham, J. K. Pollock, H. E. Turner, F. W. Miller and R. D. Meacham. Officers were elected as follows: J. K. Pollock, president; D. B. Meacham, vice-president; H. E. Turner, secretary and treasurer; F. W. Miller, assistant treasurer; S. S. Littlejohn, assistant secretary; W. M. Jefferys, manager. The furnace stack has been rebuilt and is ready for its lining.

The George Whiting Company, manufacturer of punches, shears and special machinery, formerly located at 1417 West North avenue, Chicago, moved its office and works February 1 to its own new and commodious quarters at 1701 to 1719 Elston avenue, northeast corner of Wabansia avenue, Chicago, where greatly increased facilities will be enjoyed.

Bertsch & Co., manufacturers of shears, punches and bending rolls, Cambridge City, Ind., are looking for a new location for their machine shop and factory. They must have a side track and buildings suitable for electric traveling cranes. Any factory sites or buildings that any city or commercial club has to offer will be considered.

The Illinois Steel Company will have four additional blast furnaces in operation by January 20. Three have already been ordered in this week, one at Joliet and two at the South Works, and one will go in at Gary. The Bessemer rail mill, at South Chicago, will resume rolling February 20.

Mackintosh, Hemphill & Co., Pittsburgh, Pa., have about ready for shipment a 44 x 72 in. geared Corliss engine, mill type; two 28-in. sheet jobbing mills and two 30-in. jobbing mills, all for the Portsmouth Steel Company, Portsmouth, Ohio. These mills are expected to be erected and ready for operation about April 1.

The Youngstown Sheet & Tube Company, Youngstown, Ohio, has not yet put into effect the six-day schedule at its blast furnaces, but expects to do so February 16, which is the date beginning the next pay period for this month.

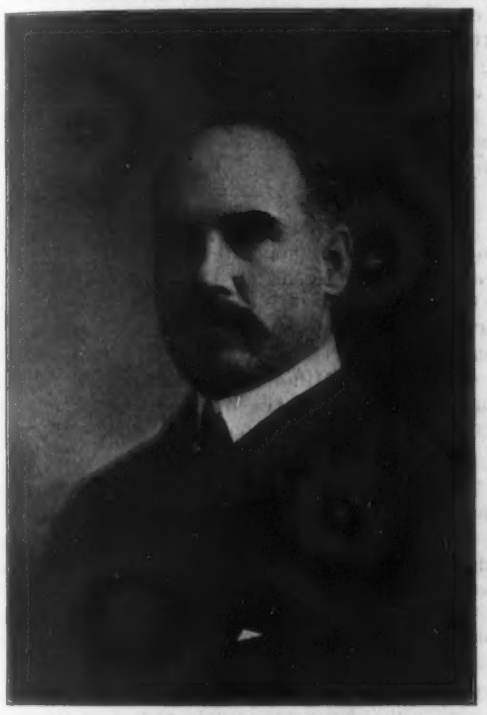
The Universal Mfg. Company, Freeport, Pa., has applied for a charter, with a capital of $100,000, to manufacture washtubs, &c. The incorporators are J. C. Stebick, Scott Hames and William Boyd.

Madeline Furnace of the Inland Steel Company, Indiana Harbor, Ind., was blown in January 10, after having been out for relining since October 6.

Obituary

LOUIS R. ALBERGER

Louis R. Alberger, president of the Alberger Condenser Company and the Alberger Pump Company, with main offices at 90 West street, New York, and plants at Newburgh, N. Y., died January 31 at his home in New York after a brief illness. He was born in Buffalo, N. Y., April 10, 1864, and was one of the best known specialists in the country on pumping machinery and condensing apparatus. After attending Yale University he went in business with his father, J. L. Alberger, at Buffalo, who was engaged in the manufacture of vacuum process specialties used in the salt industry. In 1887 Mr. Alberger became connected with Henry R. Worthington,



LOUIS R. ALBERGER.

whose large pump works at Harrison, N. J., later became a part of the International Steam Pump Company's holdings. He left the Worthington organization in 1901, when he formed the Alberger Condenser Company and acquired an existing plant at Newburgh. Shortly afterward he formed the Alberger Pump Company. The success of these two organizations was largely due to Mr. Alberger's ability as a salesman, as, in addition to having rare ability as an engineering specialist, his talents were particularly adapted to the selling end of the business.

DR. F. A. KJELLIN, the inventor of the induction electric furnace which bears his name, died December 30, 1910, aged 38 years. He was educated at the Royal Technical Institute in Stockholm, graduating in 1893. In 1899 he began his work on the induction furnace at Gysinge. For some years he had been consulting engineer in the electrometallurgical department of the Swedish Gröndal-Kjellin Company.

DANIEL DEMPSEY, general night superintendent of blast furnaces at the Lackawanna Steel Company's plant, Buffalo, N. Y., died suddenly with heart failure in his office last week, aged 52 years. He was at one time with the Maryland Steel Company, at Sparrows Point, Md.; then with the Pennsylvania Steel Company, at Steelton, Pa., and for 15 years with the Lackawanna Steel Company.

GEORGE W. FIFIELD, Lowell, Mass., who died January 30, was identified with the machinery trade all his adult life. In addition to the large shops which he built up at Lowell, he was one of the founders of the Powell Planer Company, now the Woodward & Powell Planer Company, Worcester, Mass. He was born in Belmont, N. H., April 25, 1848, and was educated in the village school and at Gilmanton Academy. He learned the trade of machinist and followed it in the Manchester Locomotive Works, Manchester, N. H., and then passed a number of years at Waltham, Mass. In 1873 he removed to Lowell and started the business which later became the Fifield Tool Company. He made a specialty of engine lathes and was for years one of the most important manufacturers of machine tools in the country. He was a designer as well as a successful business man, and many of his machines were built from his own ideas. A Democrat in politics in a Republican city, he was twice elected Mayor and served as an Alderman. He was at one time president of the Appleton National Bank and had served as president of the Lowell Electric Light Corporation. He was twice married; his second wife died some years ago. He had no children.

JOHN RICHARDSON, for many years connected with the Savage Mountain Fire Brick Company, Frostburg, Md., and Clearfield Fire Brick Company, Clearfield, Pa., died at his home in Sewickeley, Pa., February 3, from pneumonia, aged over 80 years. He had well served the trade for the last two generations.

HARRY WOODWARD COLEMAN, of the firm of J. K. Dimmick & Co., died suddenly from apoplexy at his home at Sharon Hill, Pa., a suburb of Philadelphia, January 30, aged 46 years. He was born in Covington, Ky., and entered the employ of the Addyston Pipe & Steel Company, Cincinnati, Ohio, with which J. K. Dimmick was connected, when 16 years of age. He continued with Mr. Dimmick when the latter took charge of the Anniston Pipe & Foundry Company, Anniston, Ala., and in 1889 opened and took charge of the Philadelphia office of that concern. In 1899 he became a partner in the firm of J. K. Dimmick & Co., wholesale merchants in coal, coke, pig iron and iron pipe, Philadelphia. He was a member of the Manufacturers' Club and the Pen & Pencil Club of Philadelphia, and connected with various coal, coke and gas trade organizations. He leaves a widow.

PETER KELLS DEDERICK, Albany, N. Y., died of heart failure, January 17, at Daytona, Fla., aged 73 years. He was born at Claverack, N. Y., was educated at the Hudson River Institute, removed to Albany during the winter of '59-60 and founded the Dederick Agricultural and Machine Works. He invented one of the first practical hay presses when hay baling and shipping was a new industry. In the early days the Dederick concern was the only baling press manufacturer in the world. It was about 20 years before any competitor entered the field. During the half century that he continued in the manufacturing business Mr. Dederick took out more than 300 American and foreign patents. In 1871 he established branch factories at Chicago, Montreal and St. Louis and, in 1876, he became interested in manufacturing in Paris, France, Manheim, Germany, Moscow, Russia, and Vienna, Austria, under foreign patents. He leaves a widow, a daughter and two sons, Prescott K. Dederick and Archibald M. Dederick, the sons being associated with their father in the firm of P. K. Dederick's Sons, manufacturing baling presses in Albany.

MAHLON C. EDWARDS, assistant local sales agent for the Cambria Steel Company in the Philadelphia district, died suddenly January 19, aged 35 years. He had been connected with the company for 15 years.

The National Foundry Company, organized at Youngstown, Ohio, has leased the foundry formerly operated by the Youngstown Car Mfg. Company, and will make sash weights. It is expected to have the foundry running by February 15. Later on the new company may turn out other products.

In the Pittsburgh district 36 blast furnaces were active February 1 as against 30 January 1. Three Carrie furnaces, one Duquesne, two Edgar Thomson and one Lucy were blown in last week. One Aliquippa of the Jones & Laughlin Steel Company was blown out and the three furnaces in that group are now out of blast.

The Warwick Iron & Steel Company's Annual Report

The business outlook for 1910—one year ago—appeared bright and promising. There was an optimistic feeling throughout the business community. Before the close of the first quarter of the year, indications were that pig iron was being produced in excess of consumption. The falling off in demand and market prices was gradual up to June 1. The last half of the year has been marked by rapidly declining prices, consequent upon increased competition.

Following upon the decreased demand for iron, No. 3 furnace was blown out April 26. It is now idle. It can be put into operation on comparatively short notice, and at a moderate cost, should business conditions improve. No. 1 furnace was blown out, to be relined, May 24, being restarted July 24. At the date of this report, No. 1 furnace is in successful operation. No. 2 furnace ran continually throughout the year. It will be necessary to reline this furnace in 1911. For the year ending December 31 our total product was 254,182 tons of iron. On June 1 $15,000 of bonds were paid and canceled; outstanding bonds are now $180,000. Dividends on capital stock were paid as follows: May 15, 3 per cent.; November 15, 4 per cent.

The construction of ore handling machinery became a necessity, in order to handle the additional tonnage of raw material, following upon the increased product of No. 1 and No. 2 furnaces, and also by changed conditions as respects our ore supplies. The cost of this machinery, known as an ore bridge, was $67,452.90. It has been charged to real estate, plant and equipment account. This account has also been increased by the purchase of certain meadow land, on the east of our furnace plant, and also of a limestone farm adjoining the Bassler limestone quarry, the total cost amounting to $51,394.

Furnace stack A, now in course of construction, is for use as an alternate stack, whenever No. 1 or No. 2 furnace may be undergoing repairs. Arrangements will be made, so that the A stack can be operated with the equipment of either No. 1 or No. 2 furnace. It was considered an advantageous investment, in view of the fact that the equipment is now so duplicated that it can be kept in continuous operation, while a furnace stack proper must be put out of blast at intervals, in order to make necessary renewals.

The net earnings for 1910, as per balance sheet attached, are $274,060.92.

The business outlook is not encouraging, whatever may be the cause. Pig iron is urged upon the market in excess of demand. This condition does not pertain to any particular district, but refers to every district making pig iron and steel.

Annexed is a comparative statement for the six years commencing with December 31, 1904, and ending with December 31, 1910, showing the progress made by the company, notwithstanding that, during the period included, business conditions at times have been equally as unfavorable as the outlook for to-day.

COMPARATIVE STATEMENT FOR SIX YEARS.

Assets.

	Dec. 31, 1904.	Dec. 31, 1910.	Increase.
Cash, bills and accounts receivable, &c.	$648,797.60	$1,532,034.14	$883,236.54
Real estate, plant and equipment	1,735,204.38	2,284,864.97	549,660.59
Totals	$2,384,001.98	$3,816,899.11	$1,432,897.13
Liabilities.			
Bills and accounts payable	$372,365.49	$671,674.18	$299,308.69
Mortgage bonds	270,000.00	180,000.00	*90,000.00
Reserves for repairs, depreciation of ores, &c.		244,300.66	244,300.66
Capital stock	1,455,815.00	1,499,715.00	43,900.00
Surplus	285,821.49	1,221,209.27	935,387.78
Totals	$2,384,001.98	$3,816,899.11	
Increase in plant			$537,854.54
Increase in assets			307,533.24
Decrease in bonds			90,000.00
Total increase			$935,387.78

* Decrease.

BALANCE SHEET DECEMBER 31, 1910.

Assets.

Cash		$101,369.92	
Bills and accounts receivable, &c.		558,336.36	
Pig iron, raw materials and supplies		872,327.86	
			$1,532,034.14
Real estate, plant and equipment account			2,284,864.97
Total			$3,816,899.11
Liabilities.			
Bills and accounts payable		$671,674.18	
Mortgage bonds		180,000.00	
		$851,674.18	
Reserves:			
For general repairs and renewals	$181,138.83		
For depreciation of ores	63,161.83		
		244,300.66	
			$1,095,974.84
Capital and surplus:			
Capital stock		$1,499,715.00	
Surplus — Balance January 1, 1910	$1,078,399.89		
Earnings for the year	$301,339.23		
Less int. on bonds and borrowed money	27,278.31		
	274,060.92		
	$1,352,460.81		
Less dividends	$104,536.40		
Doubtful accounts charged off	26,715.14		
	$131,251.54		
Balance Dec. 31, 1910		$1,221,209.27	
			2,720,924.27
Total			$3,816,899.11

New Railroad Equipment.—The receivers of the Pittsburgh-Wabash Terminal have made formal inquiry for 1000 steel coal cars and a similar inquiry is probable from the Wheeling & Lake Erie. The Chesapeake & Ohio has ordered 200 flat cars from the American Car & Foundry Company and the Louisville & Nashville has placed an order for 100 Rodger ballast cars. The National Railways of Mexico have ordered 200 flat cars and 100 tank cars from the American Car & Foundry Company. The Spokane, Portland & Seattle will buy 25 passenger cars. The Chilian Government is taking bids on 97 cars. The inquiry of the Hawley lines for 8000 cars, which has been talked of for many months, has been withdrawn. The Missouri Pacific is reported in the market for 75 locomotives, and the Chicago, Indianapolis & Louisville for 10 locomotives.

The Nelson Hot Blast Stove.—In a recent pamphlet issued by Arthur G. McKee, Rockefeller Building, Cleveland, a description is given of the Nelson hot blast stove, patented June 22, 1909. The illustrations show that the stove has large heating surface, with square checkers of uniform size, either 9 x 9 in. or 6½ x 6½ in. All checker walls are 4½ in. thick and the stove was designed to give a larger volume of brick per square foot of heating surface than is the common practice. It is stated that 82 per cent. of the stove lining is composed of standard 9-in. brick, 17 per cent. of standard 9-in. shapes and less than 0.5 per cent. of special shapes. Installations of the Nelson stove have been in operation for about three years and it is in service at eight blast furnace plants.

Dry Air Blast.—A typographical error in the article in *The Iron Age* of February 2, 1911, page 308, on "Results With Dry Air Blast," made an important change in what was originally written. The sentence, "In a furnace consuming 40,000 cu. ft. of air per minute, the presence of 1 grain of moisture [per cubic foot] represents the delivery of 41.2 grains of water per hour to the furnace," should have read, "41.2 gal. of water per hour."

W. M. Carr and other local business men of Wheeling, W. Va., have organized the Carr-Hamilton Engineering Company, to act as consulting engineer in laying out equipment, such as furnaces and auxiliaries for glass plants, incinerating plants, &c., and the installation of gas producer plants.

Jones & Laughlin Ore Operations

Recent Developments on the Menominee Range

MARQUETTE, MICH., February 3, 1911.—M. A. Hanna & Co. of Cleveland have added the so-called Carpenter lands to the tracts they have under option in the Crystal Falls district of the Menominee range. The property is in Section 31, 43-32. It will be thoroughly explored and for that purpose a diamond drill already is in operation. Professor Carpenter of Chicago is the principal owner of the fee, interested in which are a number of persons, among them Benjamin J. Neely of Negaunee. The Hanna interests a few months ago secured an extended lease on the Monongahela and the Revena properties in the same district. The Revena is 1½ miles from the Monongahela, and the Monongahela adjoins the Carpenter on the north. A large deposit of ore already has been proved up at the Revena and shaft sinking is in progress. Production will be started within a few months. The ore at the Revena will run between 55 and 58 per cent. in metallic iron. This is a higher average than most of the ores on the Menominee range, and, inasmuch as an extensive body has been proved up by the drills, the mine will in time be a heavy producer. The Revena adjoins Oglebay, Norton & Co.'s Bristol property.

The Jones & Laughlin Steel Company has surrendered its options on various tracts of Menominee range land and for the time being it is constructing no work in that portion of the Lake Superior region. The properties abandoned are in the Iron River and Crystal Falls districts. Other Menominee range properties will be tested eventually, it is probable. In the meantime, however, exploratory operations will be conducted in the Marquette district and some drilling will be done on the Cuyuna range, in Minnesota. The company controls a number of tracts in this latter field and it has given a portion of the acreage a partial test. The principal ore holdings of the Jones & Laughlin Company are on the Mesaba range, where it owns a group of excellent mines. It also has valuable properties on the Marquette range. Its Lake Angeline mine at Ishpeming has been producing high grade ore for many years and is still in fairly robust condition. The Rolling Mill property at Negaunee is a newly developed mine of much promise. At both the old Mitchell mine and the Iron Mountain Lake property, in the Ishpeming field, the company is operating two diamond drills. Mining operations are being carried on at the Mitchell on a small scale. It is hoped to find extensions to the present known deposits, but so far the drilling has not been productive in the way expected. The drills at the Iron Mountain Lake property have bored five holes to depths ranging from 600 to 1000 ft. There are large deposits of low grade ore at both this tract and the nearby Ogden mine of the Cleveland-Cliffs Iron Company.

Butler Brothers of Minneapolis have been the successful bidders for the work of stripping the Longyear mine in the Hibbing district of the Mesaba range. The contract involves the removal of approximately 3,500,000 cu. yd. of material. The Longyear is controlled by the Interstate Mining Company, which is the Mesaba division of the Jones & Laughlin Steel Company. The property adjoins the Morris on the south and the Webb mine on the east, and it was originally opened as an underground proposition. It has been idle much of the time since 1905. The Longyear contains a large body of ore, as is evident from the large amount of overburden that is to be removed.

Extensive improvements are in progress at the Cleveland-Cliffs Iron Company's Cliffs mine, at Ishpeming, including a fine ore crushing plant, with trestles connecting it with the A and B shafts. All this construction is of steel and concrete. In A shaft 5-ton skips are replacing the cages formerly in use. With the work at the A shaft completed, the B shaft will be given a similar overhauling. It is not expected that ore will be hoisted with the skips at both shafts much before April 1, by which time the new crusher will probably be in operation.

Clyde Mitchell Carr

Clyde Mitchell Carr, recently elected to the presidency of Joseph T. Ryerson & Son, Chicago, was born in Illinois in 1869, and has been prominently identified with the iron, steel and machinery interests for many years. After leaving college he was for two years with W. S. Mallory & Co., iron merchants, in Chicago. In 1890 he became associated with the firm of which he is now the head.

Mr. Carr is a director of the Corn Exchange National Bank of Chicago, Chicago Great Western Railroad Company, Gisholt Machine Company, Madison, Wis., and president of the Lennox Machine Company, Marshalltown, Iowa. He is a member of the American Iron and Steel Institute. He has been for a number of years closely connected with various Chicago public institutions, and is a trustee of the Art Institute, Chicago Bureau of Public Efficiency, Orchestral Association, Lake Forest University and Chicago City Plan Commission. The social organizations of which he is a member include the Commercial, Onwentsia, Chicago University, Cliff Dwellers, Saddle and Cycle and Princeton University clubs.

CLYDE MITCHELL CARR.

Electricity and Fence Wire Rust.—Investigations to discover the causes of rusting in galvanized wire have been undertaken by the agricultural engineering department of the University of Iowa, Ames, Iowa. It has been well known that the lower wires of the fence, down among the moist grasses and weeds, where rusting action would be expected to be most active, invariably last longer than the upper wires in the dry air. M. L. King, experimentalist for the department, says he has found that these lower wires in fences of any length ordinarily carry small currents of electricity, reaching in some cases a value as high as 0.001 ampere, and sometimes showing a difference of potential of as much as 1 volt above ground. Such currents are absent in the upper wires, and it has been suggested, but not proved, that the greater preservative action of the lower strands is due to the suppression of local electric couples by the through currents flowing in the lower wires.

The Thunderer, the seventeenth British dreadnought, and the fourth of the super-dreadnought type, was successfully launched from the yards of the Thames Iron Works Company at Canning Town, London, February 1. The vessel has a displacement of 22,680 tons and will be equipped with turbines with a total of 27,000 hp. She is scheduled to make a speed of 21 knots an hour, is 584 ft. in length and is armed with 10 13.5-in. guns and 24 4-in. guns. She is the largest vessel ever launched in the Thames.

New Publications

Practical Alloying. By J. F. Buchanan. Cloth bound; pages, 205, 6 x 9 in.; illustrations, 41. Published by the Penton Publishing Company, Cleveland, Ohio. Price, $2.50.

Mr. Buchanan's name is well known in connection with literature on the production of alloys, particularly in the past 15 years, a period in which the advance in this branch of the art has been remarkable. The author, referring to the large number of alloys resulting from the constant invention of new ones, says that "out of the multitudinous mixtures advocated and employed in the practical and constructive arts it is no easy matter to select or even classify the metals of importance." In alluding to the "battle of the bronzes," he adds that the honors have fallen to phosphor bronze, aluminum bronze and manganese bronze at different periods. The industry is in a constant state of change and new records are being made in alloy practice while new difficulties are presenting themselves as a challenge to investigators.

After a historical introduction, the properties of alloys are considered, chiefly the well-known alloys of the foundry. In addition to the old brass and bronze alloys, three distinct series are recognized as having taken root in foundry engineering practice—namely, the high tension alloys, the anti-friction alloys and the light (chiefly aluminum) alloys of modern invention. The composition of various alloys of tin, antimony, lead, copper and zinc is given with definite instructions for compounding anti-friction alloys. With all such alloys overheating is a fruitful cause of dissatisfaction with the wearing and working qualities. "It was found," the author says, "that babbitt alloy was greatly improved as a self-lubricating metal for fast running light machines when a portion of the tin was replaced by lead. Further experience brought out the truth that properly hardened lead was equal to hardened tin as a metal for anti-friction purposes. 'Twas then the flood arrived."

In the chapter on "Foundry Mixtures" tables are given showing the percentages of the various metals in alloys made from new metals and those from air furnace charges containing scrap. Directions are given for the making of various dips and lacquers. There is a chapter on fluxes for alloys and one on the use of crucibles in the brass foundry. In brief, the author points out in discussing the life of crucibles that moisture is the greatest enemy, while prolonged melting and intermittent heats are responsible for most of the poor averages in ordinary foundry practice. There is a short chapter on the testing of alloys, and the book ends with tables of information concerning metals, their construction, specific gravity, specific heat, electrical and heat conductivity, approximate melting points, and the weights of most of the ordinary metals and alloys. Much of the matter contained in the book originally appeared in the *Foundry* and other journals.

Welding. By Richard N. Hart. Cloth bound; pages, 181, 6 x 9 in.; illustrations, 93. Published by the McGraw-Hill Book Company, New York. Price, $2.50 net.

It is significant of the development in new welding processes that its literature should now be sufficient to fill a volume. There are four parts to this work: The first dealing with welding metals, the second with electric welding, the third with hot flame welding and the fourth with thermit welding. Iron is naturally first considered under "Metals," and most at length. Some abbreviated data are given concerning platinum, gold, silver, aluminum, copper and nickel. The section on electric welding describes the La Grange-Hoho process, the Zerener electric blowpipe, the Bernardos arc welding process and the Thomson process. After discussing the various forms of apparatus used in connection with oxy-acetylene welding, the author passes to methods of welding by the use of high pressure and low pressure torches. Some details are given of the manufacture of oxygen and acetylene. Brazing and soldering are treated at some length, considerable up-to-date matter being presented. The book is on the whole a very satisfactory presentation of the theory, practice, apparatus and tests of the various welding processes. The reader is given the caution that test and cost data must be taken with a grain of salt. While the iron tests are standard and unquestioned those for special processes have been made in some cases by interested persons. As to the performance of welding machinery, it is suggested that the prospective purchaser must figure the cost of apparatus, plus the cost of labor and the depreciation; but, most important, he must satisfy himself that the apparatus he chooses is the best for his kind of welding.

Testing for Metallurgical Processes. By James A. Barr. Cloth bound; pages, 216; 5¼ x 7¾ in. Published by the Mining and Scientific Press, San Francisco. Price, $2.

The book is based on original notes and experiments made in the laboratories of the Michigan College of Mines, the nucleus of the material having been published in 1909 in pamphlet form under the titles "Metallurgical Laboratory Experiments," and "Ore Dressing Laboratory Experiments." Descriptions are given of the apparatus and methods employed in making laboratory and small lot tests. Suggestions are given, valuable both to the student and the practicing engineer, as to the selection of the process of treatment for any ore.

Practical Stamp Milling and Amalgamation. By H. W. MacFarren. Cloth bound; pages, 166; 5¼ x 7¾ in. Published by the Mining and Scientific Press, San Francisco. Price, $2.

The writer gives his own experience and conclusions, together with what he has gathered from other mill men and metallurgists, on the examination of ores and the adjustment of the stamp mill to their requirements. It is a book of details of everyday work. The principal subjects treated are the stamp mill, its location and design; the mortar, die, shoes, tappet and curve; adjustment of hight, order of drop, feeder and screens; water supply and power; principles of amalgamation and treatment of plates, retorting and percentage of metal in retorts; loss of gold, mill tests and mill management.

The Backbone of Perspective.—By T. U. Taylor. Bound in cloth. Size, 4½ x 7¼ in.; pages, 56; 40 figures. Price, $1 net. Published by the Myron C. Clark Publishing Company, 355 Dearborn street, Chicago, Ill.

This book is a reprint of a series of notes which have been given in the form of lectures and drawing board exercises for many years by the author and are placed in this form to enable the volume to be used as a text book, thus saving time in note taking on the part of the student.

The book is divided into four chapters, the first of which deals with the primary methods. The vanishing point method is taken up in the next chapter, while axometric projections are discussed in Chapter III. The last chapter is devoted to the subject of shades and shadows. All of the different principles are clearly illustrated and each chapter contains a number of problems to be worked out by the student on the drawing board.

Republic Iron & Steel Company Handbook.—The Republic Iron & Steel Company has brought out a 1911 handbook of its products. It is leather bound and has 399 pages, 5¼ x 7¾ in. The price is $2. Preceding the details of the various finished products are a number of pages devoted to Pioneer pig iron and the operations of the company at its Pioneer plant at Thomas, Ala., where it has three blast furnaces. An illustration is given of the old Tannehill furnace at Tannehill, Ala., which was the beginning of the Republic pig iron operations in the South. A full page view is given also of the blast furnaces at Thomas, Ala., and another page is devoted to the Haselton furnaces, Youngstown, Ohio. The bulk of the handbook is devoted to tables of dimensions and weights of various forms of bar mill products, with many pages of illustrations of the shapes and sections manufactured by this company.

Customs Decisions

Machine Repair Parts

The question of the rates of duty to accrue on machine repair parts under the present tariff law came up for adjudication recently before the Board of United States General Appraisers, when a test importation made by the American Mfg. Company called for a decision. The merchandise was invoiced as 200 pairs of solid bottom cams for 1½-in. screws, and are described as repair parts for jute machines. Duty was assessed at the rate of 45 per cent. under the provision in the metal schedule for articles in chief value of metal. According to the importer, the merchandise is dutiable at only 30 per cent. as jute manufacturing machinery. General Appraiser Fischer, who writes the decision for the Board, does not agree with the contention raised by the importer, and accordingly overrules the protest. "Single and unrelated parts," says the decision, "are generally known by their particular names or descriptions, such as gear wheels, connecting rods, cams, &c., while the assembling of two or more of such parts gives to them the general description of machinery." The General Appraiser remarks that in a decision by the Board, known as No. 6967, it was held that parts of lace-making machines were not entitled to the same privilege of exemption that the statute extended to "machines." In construing this provision, Mr. Fischer says:

> The term machinery contemplates something more than a mere machine, and embraces as well other appurtenances necessary to its operation. It is used in fact to refer to a working entity, the parts of a machine, other devices and accessories considered collectively. The machinery of a jute manufacturing plant would include all the means necessary to its workings. So a machine with shafting and belting considered collectively would, if imported, be entitled to consideration as machinery. In this respect the term machinery is more comprehensive than that of machine or machines. In its scope it would apply to other parts not strictly regarded as machine parts, but, in our opinion, it would not embrace a single part of a machine, such as a wheel, or a bar, or a cam as we have here before us. The shafting or the belting, if separately imported, could not very well be described as machinery, and it follows to our way of thinking that these metal cams which are described as repair parts for jute machines are not within the meaning of the term. A single wheel or a pair of cams has not that collectiveness essential to the understanding of the term machinery.

Airtight Metal Cans

In overruling a protest filed by H. Kellogg & Sons, New York, the Board of United States General Appraisers has decided that a metal can, the inclosure of which is effected by a friction top or cover and which is thereby made airtight, is not excluded from the provisions of paragraph 195 of the tariff act of 1909. According to the board the clause of exception, "hermetically sealed by soldering or otherwise," applies to such receptacles only as are made secure against leakage or air by fusing, welding, brazing or soldering the metal parts together. The merchandise in dispute consists of tin cans filled with syrup. The tops of the cans are so made that they are closed by forcing a cover or lid into the open space where it is held by friction, such covers or friction tops serving to keep the air out and the syrup in. The cans or coverings are made of metal printed by lithographic process. Duty was assessed on the syrup at 20 per cent., while the cans were returned for duty at the rate of 4 cents a pound and 35 per cent. under the tariff provision for cans not hermetically sealed.

The question before the board was whether a top or cover of a can held by friction constitutes hermetical sealing as called for by the tariff statute. The importers contended that it does, and that the metal coverings are dutiable at the rate applicable to the contents and not at both specific and ad valorem rates as assessed by the collector. General Appraiser Fischer, who writes the decision, does not agree with the importers. He says:

> Friction closing is not hermetical sealing. The mere fact that the contents cannot leak out or air enter the can is not sufficient. A bottle closed by a ground glass stopper may be said to be secure against leakage or air, and yet it certainly would not be considered as hermetically sealed. What Congress clearly intended by the term "hermetically sealed by soldering or otherwise" was to exclude from the operation of the paragraph all metal containers made perfectly close by sealing with solder, or welding, fusing or brazing of the metal parts at the opening, so that the contents could not be removed without cutting open the metal at the top or side of the receptacle.

Iron Drums or Containers

In a decision by Judge Smith, the United States Court of Customs Appeals has reversed a decision of the Board of General Appraisers and affirmed the Government's claim for the assessment of duty on iron drums containing glycerine. The importers in the case are Marx & Rawolle. When the issue was before the board that tribunal found in favor of the importers. It appears that in addition to the duty attached to the glycerine under paragraph 24 of the tariff act of 1909, the collector assessed a duty of 30 per cent. ad valorem on the containers. The importers did not challenge the assessment made upon the glycerine, but protested that the iron drums should be admitted free of duty as the "usual" containers of the merchandise imported. The board sustained the contention of the importers and reversed the collector. The case then came before the Customs Court on review. Judge Smith, who writes the decision for the court, holds that the general board erred, and that the collector was right in returning the drums for duty.

Lead Contents of Type Metal

The American Smelting & Refining Company has been unsuccessful before the Board of United States General Appraisers in an attempt to so construe the tariff law of 1909 as to permit of lower duty on lead contents of type metal. The company imported base bullion or lead bullion, the result of a crude and primary smelting process. The warehouse entry involving the merchandise in controversy specifies 52,800 bars, weighing 5,275,852 lb., chargeable at the rate of 2⅛ cents per pound, under paragraph 182, of the present tariff act. The duty amounted to $112,111.

This merchandise was, it appears, regularly placed in a bonded smelting warehouse. General Appraiser Fischer, who writes the decision for the board, states that the tribunal is concerned with a withdrawal for consumption of 1293 bars of alloy metal, the residuum obtained in the ordinary commercial smelting of the lead bullion referred to above, and the by-product remaining after the refined lead and more precious metals had been extracted. The decision states that this alloy metal so withdrawn is shown to consist of lead and antimony, and to be, in fact, an antimonial lead.

Duty was assessed and paid on this alloy metal at the rate of 2⅛ cents a pound on the weight of the withdrawn quantity. The American Smelting & Refining Company claimed that the only duty that should have been levied by virtue of section 24 of the existing tariff act is that of 1½ cents per pound on the lead content under paragraph 191 as type metal. In this base bullion was subject to duty at the rate of 2⅛ cents a pound on its actual weight and without deduction for the weight of the nondutiable metals contained in the bullion under paragraph 182. That the issue is a complicated one is acknowledged by General Appraiser Fischer. He does not believe that it was the intention of Congress to permit the product of the smelting and refining to bear a less rate of duty when withdrawn than was applicable to it when imported—that is, it was lead or base bullion when it arrived and subject to duty at 2⅛ cents per pound. According to the decision, that rate still applies on the portion of the importation warehoused and then withdrawn for consumption. The decision says:

> We now note that in these 1293 bars of metal weighing 114,816 lb. there is present 93,282 lb. of lead. No proof is in the record that this lead could not have been recovered in the form of commercial lead, and, even if such proof had been offered, it is not apparent how it would affect the issue. If it was not pure lead it was a form of lead. As a form of lead it was then a part of the "actual amount of lead" produced from the smelting. If there is any doubt as to this issue here tried it must be resolved in favor of the Government.
>
> The provisions by virtue of which it is sought to obtain lower duties are in the nature of a privilege granted to refiners of metal and arise in connection with the permission to smelt and refine imported lead bullion. The duties chargeable are not collected, but abide the event of the performance of certain requirements. The exemptions that follow as a result of the privilege granted are to be construed most favorably to the Government.

The International Harvester Company

Extensive Construction Work in 1910 and at Present

To keep pace with the vast demand coming from all quarters of the world during the past year, the International Harvester Company has found it necessary to make extensive additions to all of its American and Canadian plants, besides building new factories in Russia and completing factories in Germany and France.

The New Tractor Works

At the Western group of works, consisting of the Deering, McCormick, Plano and Weber works, located at Chicago, the Milwaukee Works at Milwaukee, Wis., and the Keystone Works at Sterling, Ill., many extensive and costly improvements in the building line have been made, and an entirely new plant, constructed at Chicago, is devoted to the manufacture of traction engines, and is known as the Tractor Works. This new works is located south of the Drainage Canal and adjoining the tracks of the Pennsylvania, Baltimore & Ohio and Chicago Junction railroads. The buildings are of a modern type of steel, brick and concrete construction.

The machine shop is 120 x 261 ft., with galleries the entire length, and a second floor across the front of the building for experimental and pattern rooms, the offices being located on the first floor and the balance of the building devoted to machine shop purposes. The exterior of the building is largely of glass, and it is also lighted by saw-tooth lantern construction. All of the sash throughout the building are steel sash, glazed with ribbed glass. The building is provided with heavy duty cranes and elevators. The forge shop is 120 x 241 ft., and is of similar construction to the machine shop, with the exception of being provided with a high-trussed roof, affording ample ventilation. This building is also equipped with heavy electric cranes, and a gantry crane, between the two buildings, permits of handling heavy traction engines from the buildings to the cars. Foundations for additions to both of these buildings are already in place, and the scheme for future development is ample and comprehensive, providing suitably for the future extension of the plants.

The light, heat and power are obtained through an elaborate tunnel from the malleable foundry of the McCormick Works, on the opposite side of the Pennsylvania and Baltimore & Ohio tracks, by means of utilizing the waste heat from the malleable furnaces, generating steam for turbines operating the generators furnishing the current for the direct connected motors, operating all machinery at the Tractor Works, the engineering being done by the Arnold Company, Chicago. The designing and construction of these buildings were in charge of the construction department of the International Harvester Company.

The Milwaukee Works

At the Milwaukee works large and extensive building improvements have been made during the last year to take care of the growing requirements of the gas engine and cream harvester business, which are special lines manufactured at this works. Early in the season was completed a reinforced concrete warehouse, 85 x 353 ft., six stories and basement. This building was erected under what is known as the Turner or mushroom system of reinforced concrete and is a splendid type of reinforced concrete construction. The floors are designed to carry a safe load of 300 lb. to the square foot. A track in the center of the building and tracks and shipping platforms at the side afford ample shipping facilities. The building is provided with two high speed high duty elevators.

At this works there is also being constructed at the present time one of the largest gray iron foundries in the country. This building is 190 x 781 ft. and is provided with two cupola rooms, with ample storage bins for sand and other foundry material, and contains approximately 108,000 sq. ft. of molding floor, and will have an estimated capacity of 250 tons daily. The building is of brick, steel and concrete construction, well lighted, the roof being of saw-tooth lantern type. The sash throughout is steel sash. In addition to the main molding floor a gallery floor is provided, running the entire length of the molding portion of the building. Mezzanine floors are also provided and utilized for toilet rooms, core rooms and cleaning rooms. Adjoining this building is a fireproof pattern storage building, 48 x 168 ft., two stories.

The foundry building proper is thoroughly equipped with electric cranes and trolley systems, so arranged as to handle the work with as little manual labor as possible. A large gantry yard crane permits of the delivering of raw material directly to the cupolas from the yard or from the cars. Particular attention has been given to light, ventilation and sanitary arrangements, making the building modern and up to date in every respect. The engineering work on this building is done by the Arnold Company.

The Keystone, Plano and Weber Works

At the Keystone Works, Sterling, Ill., extensive improvements have been made, including the construction of a new reinforced concrete warehouse, 100 x 201 ft., four stories and basement. This building is constructed under the Turner system of reinforced concrete work and is provided with rapid elevators and inclosed stairways and is substantial and fireproof in all respects.

A fireproof paint storage building has also been completed and an extensive addition made to the power plant, involving the construction of a new wheel house and pit in the mill race adjoining the Rock River, operating the water power for the plant.

The designing and construction of this building were in charge of the construction department of the International Harvester Company.

The Plano Works, located at West Pullman, Ill., is largely devoted to the manufacture of wagons and manure spreaders, and it has been found necessary to add materially to this works to provide for the increased demand for this line of the company's products.

A new wheel shop, 100 x 320 ft., has been completed and six new modern dry kilns of the A. H. Andrews type and two of the Nichols type have been installed, and a reinforced concrete paint grinding building, 49 x 62 ft., two stories, fireproof in every particular, has also been constructed.

The designing and construction of this building were in charge of the construction department of the International Harvester Company.

At the Weber Works, located at Auburn Park, Ill., two modern buildings, commenced in the season of 1909, were put into service, one being a forge shop 80 x 156 ft., of steel construction, with concrete roof, and provided with perfect light and ventilation; the other a manufacturing building, 80 x 150 ft., four stories and basement, this being a mill constructed building, equipped with rapid elevators, sprinkler system, and all modern improvements.

The designing and construction of these two buildings were in charge of the construction department of the International Harvestor Company.

The Champion and Osborne Works

Fully as extensive improvements in the building construction lines have been carried on at the larger of the Eastern group of works, consisting of the Champion Works at Springfield, Ohio; Osborne Works at Auburn, N. Y., and Hamilton Works at Hamilton, Ontario.

The improvements at the Champion Works consist of a new foundry building, 150 x 675 ft., with cupola room extension, 42 x 61 ft.; core room, 58 x 142 ft., and core sand storage, 36 x 37 ft. In connection with this new foundry building is provided a new pattern vault 50 x 150 ft.; coke storage, 25 x 200 ft., and sand storage and toilet building, 35 x 195 ft. and 35 x 155 ft. A forge shop building, 140 x 335 ft., is also being erected. The pattern storage vault is a reinforced concrete building, all of the balance of the construction being of steel and brick, with concrete roofs.

The roof construction on the foundry building is of the same type as that adopted by the General Electric Company at its new shops in Erie, Pa., and several other of the larger manufacturing concerns in the country, and is particularly adapted to foundry construction, affording the best of light and ventilation at a minimum cost. The engineering work on this group of buildings has been in charge of the De Vore & McGormley Company, Toledo, Ohio.

At the Osborne Works, located at Auburn, N. Y., extensive building improvements have also been undertaken this year, consisting of a warehouse 128 x 258 ft., four stories, of brick and mill construction, equipped with sprinkler system, rapid elevators and provided with ample shipping facilities.

At this works a large malleable iron foundry is also in the course of construction. This building covers a ground space of 314 x 442 ft., consisting of a molding floor, 122 x 314 ft., and a mill room and annealing room, 120 x 194 ft., and an intermediate room, 60 x 200 ft., and a core and storage room, 60 x 200 ft., together with fireproof pattern vault, 48 x 122 ft., two stories. This building is of brick, steel and concrete construction and was designed and handled by the construction department of the Osborne Works.

The Hamilton Works

At the Canadian Works of the company located at Hamilton, Ont., it has been found necessary to make extensive additions in the building line to take care of the increased demands of the foreign trade, as well as to supply machines to the vast empire being developed in Western Canada. These improvements add to the capacity of practically every department at this works, and consist of a paint shop building, 72 x 95 ft., four story and basement; of mill construction and an addition to the gray iron foundry building, 82 x 200 ft., of brick and steel construction; a new mill room building, 142 x 150 ft., two stories and basement, of brick and mill construction; an extension to the wood shop building, 81 x 100 ft., and a new manufacturing building, 72 x 305 ft., four stories and basement, of mill construction.

A new warehouse in two sections, respectively, 64 x 119 ft. and 100 x 119 ft., four story and basement, of brick and mill construction, and a new office building, two stories and basement, 60 x 103 ft., have also been constructed. These buildings have been designed and constructed by the Hamilton Works.

To store and handle the goods turned out by this great increase in manufacturing facilities, the International Harvester Company of America has found it necessary, in addition to the vast number of storage buildings located throughout the country, to build during the past season 15 new general agency warehouses, located in all sections from Albany, N. Y., and Baltimore, Md., to Wichita, Kan.; Denver, Col., and Minot, N. D. These buildings have a storage capacity of 100 to 150 carloads of goods each, and range in cost from $60,000 to $75,000.

The Gary Screw & Bolt Company

Regarding the plant to be built at Gary, Ind., by the Gary Screw & Bolt Company, an identified interest of the Pittsburgh Screw & Bolt Company, Pittsburgh, W. G. Costin, president of the latter, states that the plans are about finished and bids for the buildings and equipment will be asked for within two or three weeks. It is probable that the new plant will cost $1,000,000. The product will consist of nuts, bolts and rivets and the capacity of the plant will be upward of 50,000 tons a year.

The plans call for the erection of two main buildings, each to be 450 ft. wide and 650 ft. long. They will be of concrete and steel construction and will have all modern equipment. A very large amount of new machinery will be needed, but bids for this will not be requested for some time.

The officers of the Gary Screw & Bolt Company, recently elected, are as follows: John R. McGinley, Pittsburgh, chairman; W. G. Costin, Pittsburgh, president; W. F. McKenzie, first vice-president and sales manager; Thomas W. Smith, second vice-president and treasurer; John A. Collins, general superintendent; George A. Lee, assistant general superintendent. W. F. McKenzie, who is first vice-president and sales manager, was formerly connected with the Upson Nut Company, Cleveland, Ohio.

Alumaloyd to Be Made by a New Company

The Alumaloyd Products Company, Canton, Ohio, incorporated with $250,000 capital stock, has purchased the process, good will and plant of the Alumaloyd sheet department of the Stark Rolling Mill Company of that city. A new plant is under construction in Canton to which the business will be transferred as soon as the buildings are completed. The business will be in charge of R. A. Bartholomew, who has been identified for many years with the Stark Company and other companies in the same line. The Stark Rolling Mill Company has been engaged for several years in the manufacture of alumaloyd sheets, but the business has outgrown the capacity of its facilities in this department, and the organization of a separate company was therefore decided upon.

Alumaloyd is an aluminum coated sheet metal. It has a surface like aluminum, with a smooth velvet-like finish, and can be drawn, pressed, stamped, soldered and double seamed. Its most important application has been in the automobile industry, in which it is used for bodies, fenders, hoods, radiators and other fittings. It is especially adapted to work in which a highly finished painted surface is desired, owing to the fact that it holds paint better than black sheets, and is free from the rust spots which develop on such sheets and cause the paint to peel off. In making automobile bodies and fittings a considerable saving in time is effected, as this metal does not require so many coats of paint to secure the desired finish.

The Taft Plan to Lease Water Power

President Taft has approved a plan for the leasing by the Federal Government of water power sites on public lands prepared by officers of various bureaus of the Agricultural and Interior departments. The principal points of this plan are that legislative authority be sought for issuing term leases for periods not to exceed 50 years; that these leases should contain stipulations to protect the public against the limitation of output of power through delayed or partial development; a yearly rental charge to be based on the amount of power available.

It is proposed that violation of the contract condition or persistence in charging consumers a rate declared excessive by a State Supreme Court shall be ground for the cancellation of the lease. At the expiration of the lease it is proposed to give the lessee a preference right to renewal unless the Government desires to use the property for public purposes. If the lessee fails to secure a renewal he is to receive compensation for the actual value of improvement on the ground or be allowed to remove such equipment.

The Linde Air Products Company's Growth

The Linde Air Products Company, 155 to 183 Chandler street, Buffalo, N. Y., which recently increased its capital from $500,000 to $1,000,000, has purchased sites at South Elizabeth, N. J., and North Trafford, Pa., and is proceeding at once with the erection of two large factories. It is anticipated that both these new plants will be completed and in operation by June of this year. The contracts for the buildings have been let as well as for such equipment as the company itself does not construct in its Buffalo shops.

The Linde Air Products Company already has two plants in operation—one in Buffalo and one in East Chicago—but the demand for compressed oxygen and apparatus for oxy-acetylene welding has developed in the past 12 months with such unprecedented rapidity that the additional oxygen plants are required to enable the company to keep pace with the demand.

Iron Ore Briquettes

A Tentative Test Specification

BY ALBERT E. WHITE.

Probably no question relative to the treatment of fine ores and flue dust has received greater consideration than the proper method of sintering, clinkering or briquetting of the ores. It is a question of vital interest to all blast furnace operators, although there is at present considerable disagreement among the different managers of blast furnaces as to the results of the agglomeration of fine ores. I have come in contact with many ways already devised for the sintering of fine ores and have tried to find some means of properly testing the agglomerated product for the purpose of arriving at its real worth. I have found certain portions of methods for carrying out the test, but I have not seen a concise and full statement relative to this matter.

I am therefore taking the liberty of submitting tentative specifications for the testing of sinter, clinker, nodulized or briquetted iron ore or flue dust. I do not say that these are perfect, but it does seem to me that if a product can be shown to stand up under these specifications it will prove to be a very desirable ore. I likewise feel that a presentation of these specifications may possibly call for some discussion with regard to them, with the result that desirable specifications may be brought down to a working basis in a very short time.

TENTATIVE TEST SPECIFICATIONS FOR IRON ORE OR FLUE DUST IN THE FORM OF BRIQUETTES, CLINKERS, NODULES, ETC.

Tests Required.—The products shall be subjected to the following tests: Absorption, abrasion, heat resistance, water resistance, steam resistance and compression.

Selection of Samples.—For the purpose of the tests at least 25 samples representing the ordinary commercial product shall be provided. Each sample or portions of the separate particles making a respective sample shall in all cases weigh at least 5 lb.

Absorption Test.—Five samples shall be selected and thoroughly dried to a constant dry state in an atmosphere of 250 degrees F. and their weight carefully recorded. Samples shall then be immersed in water to a depth of 1 ft. and their weights taken at the following periods from the time of their immersion: ½ hour, ¾ hour, 1 hour, 2 hours, 3 hours, 4 hours, 5 hours, 6 hours, 12 hours, 24 hours, 36 hours and 48 hours. The data thus obtained shall be plotted in a curve showing observation versus time, and the shape of this curve shall be considered in estimating the quality of these briquettes. Should a briquette fail to reach its maximum absorptive power in less than two hours it shall be rejected. Likewise if the briquettes fail to have less than 20 per cent. porosity they should be rejected. *Note.*—Superfluous moisture to be removed by careful wiping with a damp cotton cloth before each weighing.

Drop Test.—Five samples shall be selected and dropped en masse from a hight of 10 ft. on a cast iron plate. The entire material shall then be picked up and the operation repeated. This operation shall continue until the briquettes have been dropped 10 times. A sieve test shall then be made on the broken briquettes and it is required that not over 25 per cent. of them shall have been so broken as to pass through 40 mesh.

Heat Resistance.—Five samples shall be selected and subjected to 900 degrees C. of heat for a period of one hour. Two hours shall be the minimum for bringing the briquettes up to the required heat. With such treatment as this the briquettes may begin to sinter, but they must not disintegrate into small pieces. At the conclusion of this test the briquettes shall be subjected to abrasion and compression tests, and failure to stand up under these tests shall be cause for the rejection of the briquettes.

Compression Test.—Five samples shall be subjected to compression. Each briquette shall withstand a pressure of at least 1000 lb. per square inch. *Note.*—Samples having a rough and uneven surface shall be made even by a thin layer of plaster of paris.

Water Resistance.—Five samples shall be selected and immersed in water for a period of 48 hours; at the end of this time no indication of softening shall be manifested. If softening should result the samples shall be subjected, on coming out of the water, to a compression and abrasion test and they should meet these requirements although in a water soaked condition.

Steam Resistance.—Five samples shall be taken and subjected to the influence of steam heat at 150 degrees C. for a period of 12 hours. At the conclusion of this treatment no crumbling shall be manifested. If there is any indication of crumbling the samples shall then be required to pass a compression and abrasion test.

The Mechanical Engineers' Monthly Meeting

The Committee on Industrial Accidents of the National Civic Federation and the Industrial Safety Association will co-operate with the American Society of Mechanical Engineers at the February meeting of the last organization, which will be held in the Engineering Societies Building on the evening of February 14. The paper to be presented is entitled "The Mechanical Engineer and Prevention of Accidents," and the author is John Calder, manager of the Remington Typewriter Works, Ilion, N. Y.

The paper discusses the nature and incidence of industrial injury, its prevalence and high rate, with particular reference to the United States, and the present general desire for better conditions for securing the safety of machine operators. The chief causes of injury as revealed by a study made by the author of a large number of verified casualties are analyzed and a number of practicable measures calculated to reduce the present numerous fatalities and injuries are recommended. It particularly discusses the important services which the mechanical engineer can render, both as an executive and a contractor, in exercising his ingenuity to avoid industrial accidents. A number of illustrations of safety appliances are included in the paper.

Representatives of the two co-operating bodies will be present, participate in the discussion and contribute additional data from their records.

Two 617-Ft. Ore Vessels Ordered

An important development in the lake shipbuilding industry in the past week was an order for two freight boats 617 ft. in length, or 12 ft. longer than the largest lake boats at present. The negotiations were referred to in these columns a few weeks ago. The contract for the two boats was placed by William P. Snyder, president of the Shenango Steamship Company of Pittsburgh, with the Great Lakes Engineering Works of Detroit. They will have 64 ft. beam, as compared with a 60-ft. width of the 600-ft. boats, and will have a carrying capacity of about 15,000 tons of ore. There are several 600-ft. freighters in the lake trade at present, these having an ore carrying capacity of about 12,000 tons. The new boats will each be equipped with three Scotch boilers, one more than is used in the 600-ft. vessels. The boilers will be 11.5-ft. long and 14 ft. in diameter. They will be operated by marine type quadruple engines, with 23 x 33 x 48 x 69-in. cylinders, and with a piston stroke of 42 in. The boats will be built at the Ecorse Yards of the Great Lakes Engineering Works and will be ready to go in commission July 1, 1912. They will require about 9000 tons of steel. The Cambria Steel Company will furnish the plates and shapes, and this transaction has connected with it a purchase of ore by the Cambria Steel Company from the Snyder Mesaba ore interests.

By-Product Coke Ovens and Conservation

H. Koppers, contractor for by-product coke and gas ovens, Joliet, Ill., has issued an illustrated pamphlet which presents forcible views on conservation, calling attention to the great waste of available gas, ammonium sulphate and tar by the use of the old-fashioned beehive oven in manufacturing coke. The statement is made that in 1907 the beehive coke ovens of this country wasted the enormous sum of $47,451,197, which literally "went up in smoke." Attention is called to the conservation of available material which is secured by using by-product coke ovens such as the Koppers oven. The yield of surplus gas from the Koppers oven is placed at 50 to 60 per cent. of the total quantity evolved from the coal, being available for power purposes or for distribution to domestic consumers. Some details are given of Koppers plants which have been built or are now in process of construction for iron and steel companies.

The Stenotype

As a substitute for shorthand the Universal Stenotype Company, Dallas, Texas, has developed a machine known as the Stenotype. It is similar in construction to the typewriter and does for the shorthand writer what the typewriter does for longhand work. It is not, however, to be considered as a substitute for the typewriter but rather as a companion to it, although it does replace shorthand in all its fields. Many of the features of its construction resemble the modern standard typewriter, but the most important one is the keyboard, which is so constructed that with 20 keys and a small simple code it is possible to obtain all the initial and final consonants, vowels, diphthongs and figures. The arrangement of the letters on the keyboard is such that any sequence of letters necessary to write the English language at an average of more than word to a stroke is available. The average speed for an experienced stenographer is approximately 80 words per min. and when transcribing the notes at the rate of 50 per min., which is the average speed, the keys of the machine are struck over 300 times per min. The same number of strokes on the Stenotype means more than 300 words per min., and if the operator strikes the keys only half as fast as the average typewriter operator, he is writing approximately double the number of words recorded by an average stenographer.

Aside from this speed there is the advantage that the notes are perfectly legible, as instead of being executed in dots, dashes, big and little circles, long and short characters, curves and straight lines, all of which may be either light or shaded, the Stenotype writes in plain type letters. Another advantage is that under the old system of shorthand it is practically impossible for anyone to transcribe notes except the one who made them. With the Stenotype, however, anybody can learn how to transcribe these notes quickly, and one operator can transcribe the notes of any stenographer.

In operation the various words are printed on a strip of paper by depressing the proper keys, and this roll of paper is rewound as it leaves the machine on a removable spool at the rear. For transcription this rewinder is removed and placed in the copyholder which keeps the notes in plain sight of the operator. As fast as the notes in view on the roll of paper are transcribed, a key at the right is pressed and the paper is fed forward for another predetermined length, the process being repeated as often as desired. The machine is very light, the weight being 8¼ lb., thus making it possible to carry it from place to place easily.

Foundry Supply and Machinery Exhibition

Arrangements are being made for the exhibition of foundry machinery and supplies to be held in Pittsburgh, May 22 to 26, 1911, in connection with the annual meeting of the American Foundrymen's Association, the American Brass Founders' Association and the Associated Foundry Foremen. The Executive Committee of the Foundry & Machine Exhibition Company, the corporation which has succeeded the Foundry and Manufacturers' Supply Association, held a meeting in Pittsburgh recently at which it was decided to hold the exhibit in the extensive building of the Western Pennsylvania Exposition Society on Duquesne Way. The location is a convenient one in the business section of the city. The headquarters of the exhibition company will be at the Fort Pitt Hotel. It was decided that a vaudeville entertainment would be given to visiting foundrymen in the auditorium of the Exposition Building, and to this ladies attending the convention will be invited. A charge of $25 will be made to exhibitors for an exhibition permit and the price of space is 50 cents per square foot, with an additional charge of $10 for all corners. Space will be assigned on March 20. The total floor space available will be about 35,000 sq. ft., and provision will be made for the furnaces, core ovens and other operating exhibits in a temporary building. Shipments can be unloaded on the grounds from Pennsylvania Railroad sidings. As at Detroit, a charge of $1 will be made for a ticket giving admission to the exhibits throughout the week.

The General Electric Blowing Engine

A 5000-Hp. Turbine Driven Compressor for the Iroquois Iron Company

The General Electric Company entertained a party of iron and steel engineers and manufacturers at its works, at Lynn, Mass., February 4. The occasion was a demonstration of one of the three turbine driven air compressors for blowing, which are building for the new blast furnaces of the Iroquois Iron Company, at South Chicago, Ill. The demonstration was of unusual interest, for the type marks a radical step in American blast furnace practice, while the latest installation includes important improvements upon the first turbine blowing engine in this country, which has been in successful operation at the Oxford, N. J., furnace of the Empire Steel & Iron Company since March 8, 1910. Richard H. Rice, consulting engineer in charge of the turbine shops at Lynn, directed the party, assisted by a group of engineers and other representatives of the General Electric Company.

A special car took the guests from Boston to the River Works, at Lynn, and the forenoon was passed in viewing the great shops and in looking over the idle blower set and one of its companions in processes of erection beside it, with the interior of the blower exposed, permitting of intelligent observation of the principles of its design. Each unit consists of a 5000-hp. Curtis steam turbine, direct connected with the compressor, which has a capacity of 40,000 cu. ft. of air. Both turbine and compressor automatically adjust themselves to any condition which may arise, assuring a continuous supply of air to the furnace in any predetermined amount. The unit occupies a space but about 25 ft. in length.

After luncheon in the dining room of the company's offices, Mr. Rice read a paper describing the system, lantern slides fully illustrating the operation, mechanism and tests. Then the guests studied the practical operation of the blower for two hours. The demonstration took place under widely varying conditions conforming to those which may be met in the blast furnace. The presence of Julian Kennedy, the engineer in charge of building the blast furnaces of the Iroquois Iron Company, and of Herbert B. Cox of the Empire Steel & Iron Company, proved of much value in supplementing the explanations of Mr. Rice.

The guests were the following: Julian Kennedy, Pittsburgh; S. A. Kennedy, Iroquois Iron Company, Chicago; Julian Kennedy, Jr., assistant to S. A. Kennedy; M. A. Neeland, United States Steel Corporation, New York; Joseph Morgan, Cambria Steel Company, Johnstown, Pa.; Henry Howard, Merriman Chemical Company, Boston; A. F. Backlin, American Steel & Wire Company, Worcester, Mass.; A. R. Malyer, *Power*, New York; W. E. Snyder, American Steel & Wire Company, Pittsburgh; Herbert B. Cox, Empire Steel & Iron Company, Catasauqua, Pa.; F. B. Dutton, Pennsylvania Steel Company, Lebanon, Pa.; J. C. Barrett, B. R. Shover and J. A. McDonald, Carnegie Steel Company, Youngstown, Ohio; A. N. Diehl and Robert Carter Reed, Carnegie Steel Company, Duquesne, Pa.; Quincy Bent, assistant to the president, Maryland Steel Company, Sparrows Point, Md.; George W. Vreeland, Carnegie Steel Company, Mingo Junction, Ohio; B. D. Quarrie, American Steel & Wire Company, Nekburgh, Ohio; H. C. Ryding, Tennessee Coal, Iron & Railroad Company, Birmingham, Ala.; John J. Dammon, Buffalo Union Furnace Company, Buffalo, N. Y.; C. J. Bacon, Illinois Steel Company, Chicago; John Nelson, *The Iron Age*.

Two blast furnaces, F and G, at the Lehigh plant of the Bethlehem Steel Company, South Bethlehem, Pa., are nearing completion. Old furnace A has just been dismantled and on February 1 all the four effective furnaces of the company were in blast.

Exports and Imports of Iron and Steel in 1910

Heaviest Exports Ever Made and Largest Imports Since 1887

The appearance of the December report of the Bureau of Statistics of the Department of Commerce and Labor enables the complete statistics of the exports and imports of iron and steel in the calendar year 1910 to be presented. The estimates of the year's pre-eminence in exports, as given out by the Bureau of Statistics some time ago, have been more than verified. The total value of the exports of iron and steel and manufactures thereof, not including ore, was $201,271,903, being much in excess of any previous year. The figures for 1909 were $157,674,394, and for 1908 were $151,113,114.

While the exports thus made an unprecedented showing, the imports also attained important figures, their total value, excluding ore, being $47,115,112 against $30,571,542 in 1909 and $19,957,385 in 1908. In 1887 the imports were $56,420,607, but in no year since then have they been so large as in 1910.

The value of the December exports, not including ore, was $18,300,710, against $18,593,806 in November. The value of similar imports in December was $3,145,706, against $3,329,919 in November.

The December exports of commodities for which quantities are given totaled 149,645 gross tons. The figures for each month are presented in the following table:

Months.	Gross tons.	Months.	Gross tons.
January	119,094	July	128,055
February	110,224	August	134,996
March	124,753	September	109,378
April	117,918	October	129,322
May	135,344	November	154,723
June	120,596	December	149,645

Details of the exports of such commodities for December and for the full calendar year are as follows compared with the previous year:

Exports of Iron and Steel.

	December,		Twelve mos. ending December,	
	1910.	1909.	1910.	1909.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	11,419	4,076	127,385	61,989
Scrap	4,716	403	25,825	25,360
Bar iron	1,116	1,249	18,045	13,536
Wire rods	1,572	2,361	22,869	20,142
Steel bars	8,236	7,349	107,560	74,494
Billets, ingots and blooms	10,880	3,625	58,230	104,862
Steel rails	41,593	53,151	353,180	299,540
Iron sheets and plates	8,365	9,698	102,534	75,305
Steel sheets and plates	14,658	11,316	171,982	104,742
Tin and terne plates	1,056	1,130	12,459	9,327
Structural iron and steel	13,318	8,515	146,721	90,830
Barb wire	6,556	5,576	79,461	70,812
All other wire	7,342	7,406	92,463	78,529
Cut nails	496	704	8,129	9,936
Wire nails	4,259	3,075	42,870	30,655
All other nails, including tacks	765	713	10,202	7,464
Pipe and fittings	13,298	16,810	155,778	162,185
Totals	149,645	137,157	1,535,693	1,239,708

A remarkable increase occurred in the exports of pig iron in 1910. The figures show that these exports reached 127,385 gross tons, which more than doubles the previous year. It would be interesting to know from what sections of the country these exports were made and to what countries they were sent, but these details are not yet available. Steel bars showed a heavy gain, the exports increasing from 74,494 tons in 1909 to 107,560 tons in 1910. While billets, ingots and blooms fell off quite sharply, this decrease was more than offset by the heavy gain in the exports of steel rails, from 299,540 tons in 1909 to 353,180 tons in 1910. One of the most remarkable developments in the export trade appeared in the figures accredited to iron sheets and plates and steel sheets and plates. Iron sheets and plates increased from 75,305 tons in 1909 to 102,534 tons in 1910, while steel sheets and plates increased from 104,742 tons in 1909 to 171,982 tons in 1910. It is somewhat difficult to understand the division here made by the bureau. It hardly seems possible that such a heavy movement should occur in iron sheets and plates when the production at this time runs so strongly to steel and but a comparatively small quantity of sheets and plates is being made of iron. Structural iron and steel showed a very heavy gain, running up from 90,830 tons in 1909 to 146,721 tons in 1910. Wire products showed a very healthy gain, while pipe and fittings fell off to some extent, although still making an important item in the export showing.

The imports of commodities for which quantities are given totaled 31,619 gross tons in December. The imports for each month of the year are presented in the following table:

Months.	Gross tons.	Months.	Gross tons.
January	58,308	July	42,326
February	44,519	August	36,878
March	57,150	September	30,960
April	51,438	October	31,454
May	45,021	November	40,584
June	31,010	December	31,619

The details of the imports of such commodities for December and for the full calendar year are as follows, compared with the previous year:

Imports of Iron and Steel.

	December,		Twelve mos. ending December,	
	1910.	1909.	1910.	1909.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron	19,911	28,607	237,233	176,442
Scrap	2,621	22,080	72,764	63,504
Bar iron	2,504	2,683	3,823	1,920
Billets, bars and steel forms n.e.s	1,794	4,887	46,578	19,287
Sheets and plates	185	764	6,152	4,719
Tin and terne plates	3,154	5,195	66,640	62,593
Wire rods	1,450	590	20,374	10,544
Totals	31,619	64,806	453,564	339,009

Nearly all items showed a considerable gain in imports in 1910 over 1909. The heavy imports of pig iron were probably due to the important purchases of ferromanganese, spiegeleisen and other special blast furnace products which are included in the custom house classification of pig iron. The great increase in billets, bars, &c., was probably due to the reduction in duty which enabled large importations to be made of bars and other forms of steel on the Pacific Coast in competition with the products of domestic mills. It is especially interesting to note that the importation of wire rods almost doubled in 1910.

The imports of iron ore in December were 173,710 gross tons, against 197,833 tons in November. The total quantity of iron ore imported in 1910 was 2,591,031 gross tons, against 1,694,957 tons in 1909, and 776,898 tons in 1909. The imports for 1910 were by far the largest in our history.

Eclipse Concrete Mixers at Chicago Cement Show.—The Eclipse low charging concrete mixers, manufactured by the Standard Scale & Supply Company, Pittsburgh, will be exhibited at the Chicago Cement Show, February 16 to 23, at the same spaces occupied last year, being Nos. 199-200, and will include both gasoline and steam outfits and the machine in operation. This mixer in operation will likely attract much attention on account of the large opening in the drum, enabling callers at the show to see the actual process of the mixing in the drum and how the material is discharged after it is mixed.

At a joint meeting of the American Society of Mechanical Engineers, the Boston Society of Civil Engineers and the Boston branch of the Institute of Electrical Engineers, held at Hotel Somerset, Boston, February 1, in honor of Prof. Elihu Thomson, it was announced that a plan is afoot to erect a building which would be the headquarters of the engineers of Boston. A committee having the matter in charge has found that a building on Park street could be erected for $1,500,000, from which between $30,000 and $50,000 would be collected in rents. The plan is looked upon with great favor in engineering circles.

Westinghouse Type E Alternating Current Generator

A Low Speed Engine Driven Alternator Possessing a Number of New Features

The Westinghouse Electric & Mfg. Company, Pittsburgh, Pa., has recently developed a new type of alternating current generator. One of the special features of

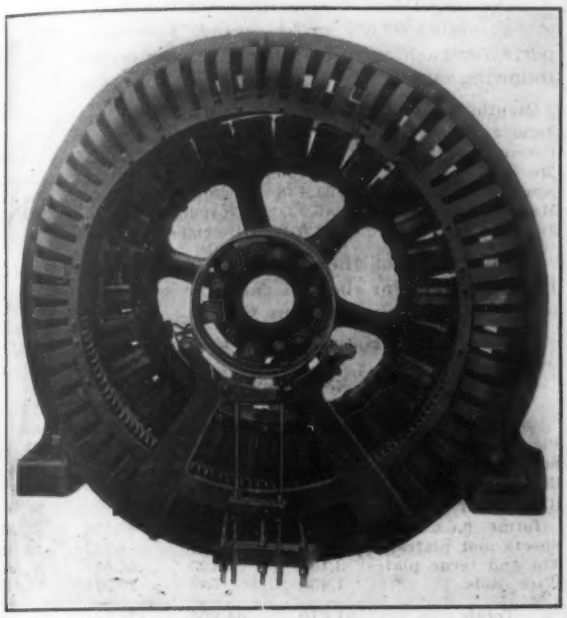


Fig. 1.—One of the New Type E Alternating Current Generators Built by the Westinghouse Electric & Mfg. Company, Pittsburgh, Pa.

these new units is their ability to carry commercial loads having a low power factor successfully. This new line is designed to operate with a direct connected engine furnishing the necessary power, and generates either two or three phase current at a frequency of 60 cycles. The various sizes range from 50 to 1100 kva., and the standard voltages are 240, 480, 600, 1200 and 2400 volts. Fig.

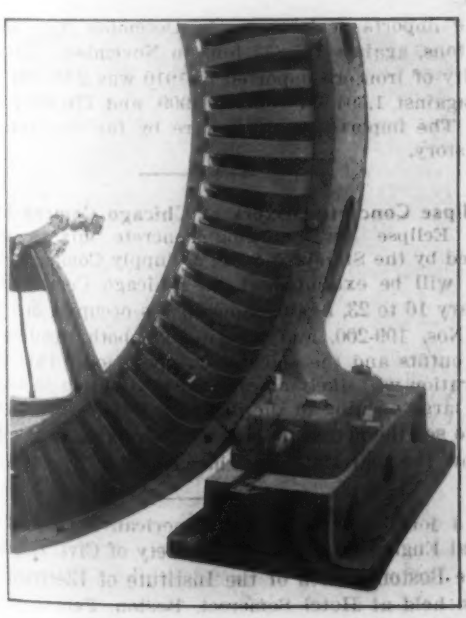


Fig. 2.—The Adjustable Shoe and Slide Rail for Shifting the Frame.

1 shows the general appearance of the new line, which is known as the type E; Fig. 2 is a view of the adjustable shoe and slide rail provided for shifting the frames of the smaller sizes, while Fig. 3 gives details of the brush holder rigging.

These new generators are of the revolving field type and the stator is designed to give great rigidity and plenty of freedom for the end connections of the armature windings. Excellent ventilation is afforded by the construction employed. While care has been taken to produce machines capable of giving satisfactory service under heavy loads and at low power factors and an ample factor of safety is allowed, the materials are used economically. The frame consists of a one-piece casting, except in the larger sizes where the diameter is such that the frame must be split for shipping. In these machines the halves are securely bolted together, which gives practically the equivalent of a solid frame. The smaller sizes of machines have slide rails of the type illustrated in Fig. 2, upon which the frame can be shifted to expose the rotor.

The armature core is built up of japanned steel laminations dovetailed in recesses in the frame. In assembling them pressure is used and they are securely held in place by finger and end plates. Finger plates are also employed to give a firm support to the teeth at each end of the core. A uniformly low core temperature is maintained by employing interior ventilating ducts of ample proportions. The design of the armature winding is such as to enable repairs to be easily made. Wedges are used to hold the coils in place in the open armature slots, and the coils are not only interchangeable, but are completely formed and insulated before being assembled. The end bells used to protect the armature winding are attached to the end of the frame and consist of a number of segments built into a circular form and fastened together with bolts, so as to be not only light and open, but at the same time rigid and indestructible. Except in the larger sizes the brush holder brackets are bolted to the armature frame, thus making each generator complete in itself. The brush holders in the larger sizes are mounted on a pedestal, such as is shown in Fig. 3, which is fastened to the engine bed plate with bolts. As two brushes are provided for each collector ring, it is possible to adjust any of the brushes without opening the field circuit.

Fig. 3.—The Brush Holder Rigging Employed on These Generators.

The rotor consists of a casting so proportioned as to reduce cooling strains, while the material employed gives a homogeneous magnetic circuit. The laminated pole pieces are bolted fast, and the field coils are wound with strip copper, with the long dimension at right angles to the axis of the coil. Fireproof installation is used between the turns and the heat generated is readily dissipated by radiation, as every turn of the field coil winding is exposed to the air. If desired a cage damper winding, consisting of a series of copper bars embedded in the pole faces with the ends short circuited in the same manner as the squirrel cage winding of an induction motor, can be used. This type of winding is said to be an effective damper to any speed fluctuation and tends to prevent hunting. When a steam engine is used to drive the generator this winding is not essential to satisfactory operation, but its use is recommended where internal combustion engines are employed.

The collectors are of the spider type and consist of two machined cast iron rings mounted on and carefully insulated from a cast iron bushing or hub. This hub is bolted to the rotor spider casting, so that proper alignment is maintained regardless of any shaft adjustment.

Shop Floors—I

The Materials Employed and the Methods of Construction Best Adapted to Various Uses and Conditions

BY H. M. LANE.

This is a subject so broad and so influenced by local and manufacturing conditions that the best floor for any given location is a matter of considerable study. Originally, the floors used in different regions were determined chiefly by the building materials available and the style of construction in vogue. Local soil conditions, moisture and other factors also naturally claimed some attention.

In the early English and Continental factories and engineering works stone and brick were used for walls, the buildings were mostly of one story, and for the floors, it may be said, that the workmen wore them on their feet. In certain Continental countries these were the well-known wooden shoes, while in England they were clogs or pattens, the former being leather shoes with a wooden sole, and the latter a leather slipper with a wooden sole. In any event, the heavy wooden soles or wooden shoes kept the workmen's feet away from the cold damp stone or earth floors. In dye works, paper mills and other places where the floors are wet, and in certain metallurgical operations where the men have to pass over hot metal, heavy wooden-soled shoes are still employed.

The modern workman, however, insists upon wearing a comparatively thin-soled leather shoe, and he wants the floor conditions to be such that he will be comfortable in such shoes. This means that the floor must be of such material and of such a temperature that it will not extract heat rapidly from the body. Of course, there are certain manufacturing conditions where moisture is present where the workman must protect his feet with rubber or otherwise. It has also become the custom to keep factories fairly warm, and this renders superfluous the extremely heavy dress of the workingman of former times; hence influencing his shoes and in turn the floors of the shop.

The workingman is not the only factor affecting the floor problem. The functions of a floor may be stated to be: 1, To support loads, either of work, machines or men; 2, to resist wear or abrasion from the workman's feet, from trucks and other means of transportation, and from the handling of material upon the floor; 3, to protect both workmen and product from dampness. In addition to these three a floor must for certain purposes be practically dustless, and in some cases must be resilient and elastic in a measure.

Foundations

The lower or ground floor of any given plant depends in some degree upon the character of the ground on which the plant is erected. If comparatively heavy material is to be handled upon it, this floor must be firm and strong. If the ground is hard and firm, so that it is capable of bearing or supporting a considerable load per square foot, the floor will not have to be thick. But if the ground is soft and yielding, and particularly if it is wet or swampy, the floor must be in the nature of a floating foundation and the heavier the work the thicker this foundation must be.

Whenever possible transportation of heavy loads upon the floor on trucks or cars should be avoided. It is also well to avoid tracks in the floor, if possible. The objection to tracks is that the trucks are confined to them and are liable to congest certain parts of the plant at times. Then, too, the tracks break up the floor surface. Wherever possible loads should be carried by trolleys or cranes supported from above. Of course this is not always possible. Hence, in many cases the floor must be so designed as to stand trucking. This brings us to the first great division in floors of all types—namely, the runway or trucking floors.

RUNWAY FLOORS

The consideration of a runway floor directs attention to the runways or traffic ways inside the buildings and also the transportation of supplies in the yard. Where concrete floors are used and trucking is to be done over them the best form of truck should be considered. Square flat treads on wheels should be avoided, as should also rough cast iron wheels. For moderate loads the best trucks for working on concrete are equipped either with rubber tires or with wheels having wooden treads or rims, with the end grain of the wood exposed in the tread. Whatever the material, whether wood, rubber or metal, the face of the tread should be rounded and the corners should be well rounded. When a truck turns a corner the load tends to swing the truck on the outer wheels and to force the outer wheel edges to dig into the floor. A curved face on the truck will materially reduce this tendency. The writer knows of factories having concrete floors throughout all their manufacturing departments over which thousands of tons of product have been trucked in loads up to 2000 lb., and still after several years the floors are in excellent condition. There are two secrets of the success of this particular case.

In the first place, the trucks are constructed with properly faced wheels; and, second, the floors are constructed in the best possible manner and with as few joints as possible. The only place where joints appear in the slabs is over the girders in line with the columns. At these points there has been some slight breaking up of the floor, which has necessitated a few patches 1 in. or less in depth. This case shows that concrete floors can be made to resist a considerable amount of trucking traffic.

Metal Plates

Where heavy traffic exists it is best to surface runways with metal plates. Such plates, however, should be corrugated or roughened sufficiently to afford a foothold for the men. For ground floors cast iron plates are very generally used, laid in concrete. For second floor work steel plates are frequently employed. Where these are laid in concrete most engineers turn the edges of the plate down as flanges and depend upon them to anchor the plates into the concrete. The trouble with this method of fastening is that the constant truck traffic over the surface of a steel plate tends to stretch the upper surface, and if the outer edges are fastened securely the center of the plate will finally rise and be loosened from the concrete. If the plates are fastened at the center the stretching of the upper surface will tend to keep the edges in contact with the floor.

Steel plates with properly rolled surfaces having diamond shaped or other simple forms of projections are very commonly used for the runways in foundries; and in some cases these are not secured to the floor in any way. If traffic over them raises any of the edges the plate is taken up, straightened and returned to its place. A few blows of the hammer will peen such a plate straight.

Concrete Surfaces

Where it is desired to maintain a concrete surface through the entire plant the resistance to wear of the runway can be greatly increased by introducing iron gratings into the top layer of the concrete upon the run-

way. These are composed of steel bars ¼ in. thick, and of any suitable width, which are spaced ¼ to 1 in. apart by suitable iron washers, and are then placed on the floor while the concrete is being laid, and the spaces between the bars are filled with concrete as the surface is made up.

The concrete is trowled level with the top of the bars and the steel naturally takes the wear of the trucks. This gives the effect of a steel working surface without covering the entire area with steel, and the concrete between the bars prevents the workmen from slipping.

In larger factories and certain types of woodworking plants where the material handled is quite bulky after it is put together, so that it cannot be transported easily on trucks, it is frequently pushed along the aisles on runways. For instance, in chair factories 12 or 15 chairs are grouped together and pushed along the runway by the workman, who follows behind the train, the chairs sliding on their legs. This necessitates the use of a smooth, slippery surface in such runways, but capable at the same time of resisting wear. Smooth steel plates from ⅛ to ¼ in. thick have been found to serve these conditions better than any other material.

Wood and Asphalt

For ground floors where traffic is heavy there are few floor materials that present so many good qualities as a wooden block floor with the end grain presented to the traffic. A number of floors of this type will be described later in this article. For upper floors and moderate traffic an excellent floor can be made from ⅞ to 1⅛ in. maple laid with the grain at right angles to the direction of the traffic.

Whenever a wooden floor is to be subjected to traffic the boards should not be tongued and grooved, but should have square edges, which are abutted as closely as possible. In the case of the tongued and grooved floor the rib at the upper side of the groove is sure to be crushed and broken off in a short time, and even in the case of heavy stock without tongues and grooves it is remarkable how soon small truck wheels will sliver the timber. Where possible trucks with wheels of fairly large diameter should be used in all such runways, as it will greatly increase the life of the floor.

For light trucking, asphalt runways are frequently used with good results. The conditions which govern any floor for a runway or traffic way are similar to those which govern a street pavement, and the heavier the traffic the stronger must be the surface presented to resist it. The tractive force used for trucking also plays a part in the selection of the flooring or paving for ordinary traffic ways. In factory yards horses are sometimes used, and when this is the case a pavement or floor material must be used, which will enable the horse to get a good grip with its shoe calks. For runways in the yard wooden block, paving brick or asphalt have each certain advantages corresponding to their advantages in roads.

Far too little attention is paid to the floors which pass outside the factory proper. The runways or traffic ways through the yard are just as important to the manufacturing establishment as are the similar arteries inside the factory walls, and the surface of all such runways should be so constructed as to enable material to be moved with the minimum cost. In some factories the work is carried through all the buildings upon trucks, and is never allowed to touch the floor. In this case the entire floor area of the plant becomes subject to the rules governing trucking runways; but the density of traffic in any given runway in such a plant is likely to be reduced and the work distributed over a larger area. For ground floors where these conditions exist the floor may be of paving brick, asphalt blocks, wooden blocks, regular street asphalt, concrete or plank, each having its special advantages. For upper floors the surfaces are practically confined to hardwood flooring, concrete and concrete with an asphalt surface. In many cases it pays to pave much of the yard area of a plant. This is particularly true when some good cheap paving like treated cedar blocks or other treated wooden blocks can be obtained, and we know of cases where such outside floors or paving is earning good dividends.

MANUFACTURING FLOORS

Turning our attention to floors in general, we may first consider the types of first story floors which have been brought into use. For heavy work a number of types of wooden block flooring have been evolved. One of the first of these followed the lines of a street pavement, which was popular some 30 years ago. This is illustrated in Fig. 1. A foundation was prepared by rolling gravel or cinders into a compact layer, as shown at A, Fig. 1. This was covered with from 1 to 2 in. of sand, as shown at B. Next there came a layer of 2-in. plank, marked C, and upon this wooden blocks about 5 in. high, cut from plank 2 to 3 in. thick, set on end. These are shown at D D. In some cases a wooden strip, E, about ⅞ in. thick and having the width equal to the length of the blocks D D, was placed between the rows of blocks. This was certainly not good practice, for the strip E was sure to shrink or swell with the different weather conditions, giving an uneven surface; also the strip exposed cross grain, which wore more rapidly than the end grain of the blocks.

There are three objections to this floor. First, the under layer, or plank C, tended to transmit the effect of

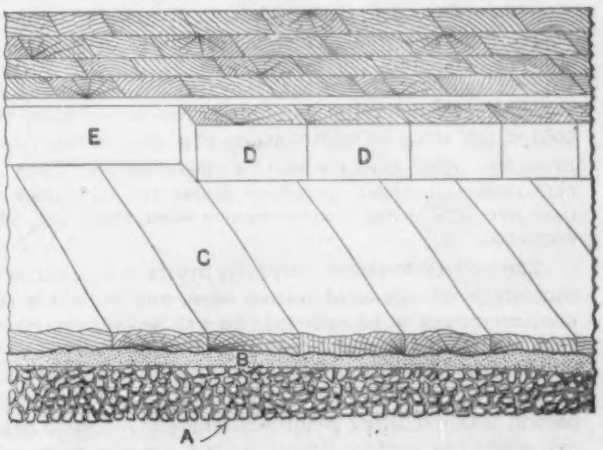


Fig. 1.—Wooden Block Floor of Street Paving Type.

a sudden blow to the surrounding floor, affecting a considerable area, while if the blocks had not been supported by the plank the dropping of a heavy casting upon the floor would simply drive down a few of the blocks, which could subsequently be removed and reset. The second objection is on the score of repairs or changes. If it was desired to cut a hole in the floor it was necessary either to tear up a large section or to cut off the plank C, which was a difficult job, and when repairs were made would result in an irregular floor. Third, the underlying plank C were naturally exposed to conditions which made them liable to decay with considerable rapidity. For street paving the planking usually failed in about five years, and this let the blocks settle.

Modern Block Floors

Wooden block floors are in extensive use both in this country and abroad. Fig. 2 illustrates a general type of floor which has met with considerable favor. In the illustration F represents a layer of from 10 to 12 in. of cinders, which were placed on the ground and rolled hard. Before placing the cinders the underlying soil was also rolled hard. On top of the cinders is a layer of concrete, G, which varies from 4 to 12 in. in thickness, depending upon the burden the floor is to carry, and also upon the underlying soil and the necessity of having a floor capable of distributing loads. In most cases in this country the wooden blocks H are laid directly on the concrete, as shown. In some instances, however, a layer of sand from a small fraction of an inch to 2 in. in thickness is placed on the concrete and the blocks abutted on this—a plan used in a number of European installations. Abroad the floors are commonly made of what is known as red deal, or fir, though the tree from which this is cut is really not a fir but a pine. The blocks are usually from 5 to 6 in. in length, and cut

from 3-in. plank. They are treated with creosote or some other preservative agent before being laid.

In this country the selection of block material has depended upon the local paving customs or upon the local timber market. We know of a number of factories where oak blocks are in use. In one large heavy work machine shop and erecting shop a floor of this kind has been in use for 14 years, and is still in excellent condition. In this case the blocks were set with ¼-in. spaces between them, as shown at J J, Fig. 2, and these spaces were filled with dry, fine sand. The blocks were not treated with any preservative or set in tar or asphalt, and still they are in excellent condition after more than a dozen years. We know of other cases in which the blocks have been dipped in tar before being placed in the concrete, and subsequently the spaces between the blocks poured nearly full of melted tar. The surface was then dusted over with sand, which was swept into

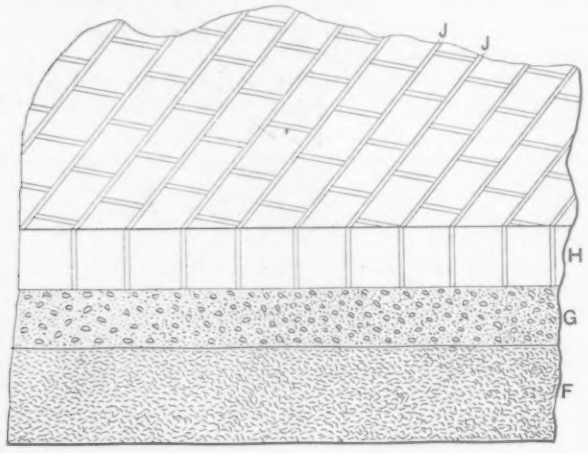


Fig. 2.—Wooden Blocks Laid on Concrete with Underlying Cinders.

the cracks, thus in effect making a block pavement with a tar and sand filler. Repairs and changes could naturally be made more easily on a floor which is not treated with a tar filler.

Where the blocks are not treated, if they are exposed to dampness they have a tendency to swell, so that if not treated they should always be laid with at least ¼-in. cracks between them. Even then the floor will sometimes show a tendency to buckle. Now that several plants have been installed in different parts of the country for impregnating timber with preservative, it is better to use treated blocks, and to lay them without tar filling. Soft wood blocks when treated seem to wear about as well in a shop floor as oak, and if the proper preservative has been used their life should be indefinite. Creosote is the best material for treating wooden blocks.

One interesting feature which has been reported to the writer from a number of plants, and which has also frequently come under his observation, is that when these blocks become dented or deformed on account of the heavy castings falling upon them, the dents so formed seem to be filled again, as the wood fiber slowly comes back to its former position. We know of no other floor material of which this is true to such a marked degree.

Protecting the Floor from Moisture

In laying block floors particular care should be taken to guard against any tendency to dampness in the underlying soil by suitable drains, and if necessary by placing a layer of tar concrete on top of the cinders beneath the floor. Some of the particular advantages of a wooden block floor are that castings or machines do not have a tendency to slip upon it; machines of considerable size can be attached to it without any difficulty; large machines can be safely and easily erected upon it, and blocks or braces can be nailed to it when it is necessary. Owing to the fact that wood conducts heat but slowly, such floors always feel relatively warm under the workman's feet, and the slight elasticity does not produce fatigue as rapidly as a harder surface would.

In some cases a floor of peeled white cedar poles cut into 5 or 6 in. lengths is substituted for the block pavement shown in Fig. 2. A plan view of such a pavement is shown in Fig. 3. In this case the workman in laying the floor split the blocks up with a hatchet, so that they fitted together as well as possible. Any small cracks are filled with sand, and in some cases tar is used between the blocks, but in a shop floor this is generally deemed unnecessary. Where cedar blocks are used their life indoors is almost indefinite without any preservative. The foundation for the flood should be constructed, as shown in Fig. 2. Decay is the greatest enemy of any wooden floor and moisture favors decay. Hence wooden floors must be kept dry and particularly wooden block floors.

Plank Floors

We now come to the subject of plank floors laid on concrete or other foundations. Fig. 4 illustrates a type which was quite common a few years ago, and still persists in some localities. The soil was first leveled off, and if on filled ground the filling material was rammed and puddled in place as thoroughly as possible. On top of this a layer of 10 to 12 in. of cinders or of coarse broken stone or slag was placed in position and rolled thoroughly. This is shown at K, Fig. 4. Next 6 in. of concrete was laid on top of the broken stone, as shown at L. This concrete was generally put down in two layers, about 4 in. of it being placed first, after which the mud sills M M were placed in position and leveled up, and then the balance of the concrete run in between them. In the old practice the concrete was not brought up under the bottom of the floor, but air spaces were left between the timbers M M and under the planking N. These air spaces were ventilated through openings at the ends or by boring holes in the floor. The planking N, which constituted the subfloor, was generally made of hemlock about 3 in. in thickness, and upon this there was laid a diagonal maple floor marked O, Fig. 4. More recent practice introduces a layer of tar concrete between the layers K and L, and brings the concrete up flush with the tops of the sills M M.

A better form of construction is the tar base, in which L is made a layer of tar concrete in place of coment concrete. On top of the layer of cinders or broken stone K there is generally placed from 3 to 5 in. of coarse gravel or broken stone mixed with coal tar and rolled into position with a heavy roller. On top of this there is placed

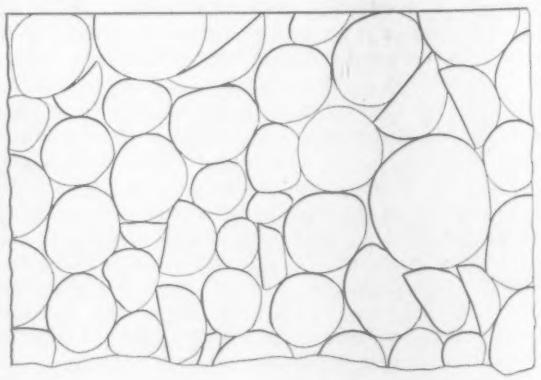


Fig. 3.—A Floor of Cedar Blocks.

1½ in. of tar concrete, composed of a mixture of coal tar and Trinidad asphalt and fine gravel or fine crushed stone. This is rolled down to about 1 in. in thickness. The timbers M M are then dispensed with and the plank N laid right on the tar asphalt, while the latter is hot and soft. The plank is nailed to the asphalt.

We know of a floor of this kind which was laid in a basement in an Eastern city, where when excavating for the building the soil was found to be full of water. After 10 years of service it was necessary to cut through this floor, when it was found that the subfloor spiked to the asphalt was in perfect condition and showed no signs of dry rot. In this case the subfloor was made of hemlock. We know of other cases in which chestnut lumber has been used for this purpose, and we also have instances where Southern yellow pine or Northern spruce has been

employed. There is no reason why any firm timber which has a fair life cannot be used for this subfloor or planking. The advantage of the tar concrete over the form shown in Fig. 4 is that the sills M M had to be laid in wet cement concrete and hence were predisposed to decay. If the plank is laid on tar concrete and the upper surface of the floor subsequently kept dry, there is no way that moisture can penetrate to it and start decay. The so-called dry rot is the result of a fungus growth which takes place in stagnant air. The plank which is laid directly upon the tar concrete is protected from the attack of such fungus and in addition to this the tar in itself is a preservative.

In the modern shop floors laid on tar concrete or upon any other similar base it has become the practice to lay the top floor at right angles to the sub or base floor in place of diagonally. There never was any really sensible excuse for the diagonal flooring. It is wasteful of material and difficult to repair; hence the practice of laying flooring at right angles has superceded this.

Heavy plank floors without a top wearing surface of hard wood have been used in many cases, particularly on ground floor levels or in one-story shops. In some cases these are put in where the shop is built on filled ground, and are intended simply as a temporary floor to last a few years. In other cases they are used because they are relatively cheap and are easy to attach machines to. Where the ground is fairly dry the general practice is to roll the earth hard and then to place from 12 to 15 in. of cinders on top of this and roll them hard. Heavy mud sills, usually made from 4 by 6 in. or 6 by 6 in. timber, are laid on top of the cinders, being bedded in 1 in. or more. On this is spiked a 3-in. floor, usually

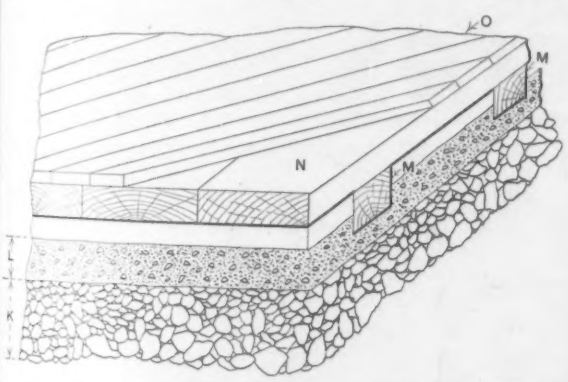


Fig. 4.—Plank Floor with Air Spaces. Foundation of Broken Stone and Concrete.

made of oak, though in some cases yellow pine or even hemlock has been used. An oak floor of this kind has given fair service for eight or nine years, after which the sills were so badly rotted out that the floor had to be replaced. In cases where the underlying earth is damp or steam finds its way under the floor decay is much more rapid, and we have known such floors to fail in from four to five years.

Floor Surface of Concrete or Asphalt

In the case of first floors, or ground floors, which are to be exposed to moisture on the upper surface, as, for instance, in paper mills, plating rooms or in any place where water is used freely, a concrete or asphalt floor will be found best.

It may be well at this point to say something concerning the surfacing of any concrete floor. The surfacing should be so done and such material should be used as to give as near a waterproof structure as possible —a floor that is not slippery and that will have the maximum resistance to wear. The materials available will have a marked influence upon the practice of top dressing for concrete floors. Some sand is composed of grains which are exceedingly brittle. This is also true of certain stone used for aggregate. The material itself may be hard enough to resist wear, but such that it will crush or powder under truck wheels, thus leaving holes in the floor and allowing the cement in which it is embedded to be broken down from an exposed edge, so that the entire upper surface is quickly destroyed. Suitable material for ordinary concrete can be obtained in most localities, but it will frequently pay to bring the material for the top dressing or wearing surface from a distance, so as to secure the best results. Hard blue limestone, trap, granite and various other similar rocks have been found to give excellent satisfaction for this purpose. Sandstone, except when highly metamorphic, and all soft limestone should be avoided. In most cases it is best to consult the practice which has been followed in other shops and find a material which has been satisfactory and then use it. In some cases we have found used what they termed locally "iron mine tailings." These were the hard gangue material separated from magnetic iron ores by concentration from the mines in northern New York State.

In laying a floor surface or top layer the material should be placed in position before the underlying cement has taken its final set, so that it will bond with the lower floor. When this is impossible the lower floor must be thoroughly cleaned by sand blasting or some other suitable method and then scrubbed with a neat cement slush before the floor is dry. When laying a top dressing on concrete which has been in position for some time, after the surface has been cleaned and roughed, it must be thoroughly wet so that it no longer has a tendency to absorb moisture. At the same time care must be taken not to leave too much moisture on the surface of the concrete, as it would thin the floor material when it is laid in place.

GRANOLITHIC FINISH.

The Aberthaw Construction Company, Boston, Mass., calls the top finish for cement floor which it lays a "granolithic" finish, and it advises using one part of Portland cement, one part of stone, from ½ in. down, and one part of sharp sand. The stone should contain no dust and the sand no grains which will pass a 50-mesh sieve, and should preferably have grains of such size that they will range between 20 and 30 mesh. This material is mixed as dry as it is possible to work it, spread on the floor, struck off level by means of screeds or strips, and after the initial set the surface is troweled smooth by an expert workman. Generally the floor is put down in two layers, the first being troweled hard on the underlying cement slab so as to rub it into intimate contact with the slab and eliminate any possibility of voids. The second layer is then struck off level with the screeds, allowed to take its initial set and then troweled to a smooth surface. The troweling lays the grains of stone or sand in the surface flat so that they are in a position to take the wear. Troweling should be continued until a thin film of water appears on the surface, but the mixture should be so dry that it takes considerable troweling to accomplish this.

The tendency of all concrete workers is to hurry through their job, and a floor of this kind should be laid only by an expert who is willing to stay with it until the material has been sufficiently troweled and rubbed to a perfect surface.

This troweling of the floor to a surface after its first set reminds us of a curious experiment tried by a noted contractor in regard to the resetting of cement. He had a batch of cement mixed up in the morning, and made test briquettes from it at intervals of one hour throughout the next 12 hours. As the cement had passed its initial set it was necessary to break it up with a hammer and work it over before it could be gotten into the last briquette molds, but by thorough troweling this was accomplished. This series of briquettes was then put through the regular tests, and to his surprise the material which had been left 12 hours after mixing and then made into briquettes was the strongest. It is probable, however, that the mechanical work which had to be done to get this into the mold and make a good test piece had as much to do with its strength as anything else. The results of these experiments lead us to believe that it is possible that the long troweling has something to do with the making of a wear resisting surface.

When a surface of the kind mentioned is used on upper floors which are composed of concrete slabs and the top dressing put on before the slab has fully set, the entire

floor becomes one piece and the surface takes part of the compression, thus making it possible to use a thinner floor slab than would otherwise be necessary. As will be shown later, a wooden floor on top of a concrete slab is a dead weight and increases the burden which the supporting structure must bear, and hence necessitates heavier columns, girders and floor slabs. For this reason concrete surfaces for upper floors in factories are generally cheaper than wood.

In certain factories there is considerable complaint about dust arising from concrete floors. Under ordinary manufacturing conditions the amount of dust seems to depend inversely upon the quality of the floor. We know of factories which have been running for years with concrete upper floors which show very little wear and report no trouble from dust. On the other hand, in the case of poorly laid floors the dust is excessive.

Waterproofing Concrete Floors

Various compounds have been brought out for surfacing a concrete floor. In some cases we find them painted. This is expensive, however, as only the film of paint is presented to resist the wear, and as soon as it is gone we are back to the bare concrete floor proposition. Paint naturally grinds or wears out much more rapidly on a concrete surface than on a wooden surface. One of the best coverings in this class is pure linseed oil thinned with turpentine or naphtha. This will strike into the surface of the floor and form a more permanent protection than ordinary pigment paints. It will also render the floor waterproof. As a rule in the case of a well surfaced concrete floor the troweling makes it practically waterproof at all points except the joints of the floor slabs.

We know of cases in manufacturing establishments where glass is ground in which concrete floors have been used above the ground floor with a constant flow of water over them from the machines. These floors were made water tight by troweling the upper coat thoroughly. When cracks develop in such a floor they will have to be stopped with pitch.

Concrete Floors in Erecting Shops

Before leaving the subject of concrete floors it may be well to mention the fact that there are apparently great difference of opinion concerning the advisability of a concrete floor for an erecting shop. We believe that the efficiency of the concrete floor surface under these circumstances depends more upon the care taken in using it than upon its inherent virtues. For instance, in a plant erecting agricultural machinery, where castings weighing a few hundred pounds were dragged or bumped around the floor, the concrete was worn out rapidly, while in a very heavy work machine shop erecting water wheel appliances, gas engines and other machinery weighing many tons, the floor surface was in perfect condition. In this shop, however, when a heavy piece was lowered on the floor, they generally threw a couple of planks under it. In like manner, as the pieces were brought in by the traveling crane they were usually placed one upon another and were never dragged or rolled around on the floor. We may say that the reason this floor survived was that the men were not strong enough to bump the pieces around, and the cranes were handled in such a way that the surface of the floor was not dug up.

In like manner in a locomotive erecting shop we found a concrete floor doing excellent service. The locomotive, however, is erected on a pair of steel rails at the sides of the erecting pit, and many of the parts as they are brought in by the cranes never come into contact with the floor. Most of the pieces are so heavy that they are handled with cranes, and the floor had little to do but bear the weight of the men and minor parts or to support an occasional casting which was laid upon it. Where the floor is to receive rough usage, as in the first case mentioned, no surface better than a wooden block floor could be found.

Effect of Concrete on the Health of Employees

Referring to the objection to concrete floors on the ground of their effect on the health of the men, we believe that the underlying principles are generally misunderstood. Inquiries have been made in many plants working both metal and wood and using concrete floors. In no case does the writer remember having found serious complaint from employees on the second or upper floors of a plant when the room below them was heated. The complaints usually come from the ground floor. We know that concrete is a very fair conductor of heat, and always feels cold to the touch if at a considerably lower temperature than the body. As already stated, the modern workman wears thin soled shoes, and if he stands for some time upon a cold concrete slab it will absorb the heat from his feet and conduct it away until it finally chills or numbs the feet or limbs. This results in an insufficient blood supply in the feet, and standing on the feet in this condition makes them sore. The complaint of its being damp and of the men getting rheumatism is generally due to the above mentioned causes more than to dampness. If the floor is damp, however, it will conduct heat more rapidly, and hence rob the body of heat faster and aggravate the conditions due to slow circulation in the limbs.

In erecting shops and other places where the men are moving about even on damp concrete slabs, very few complaints are heard for the reason that the exercise keeps up the circulation and overcomes the effect of the drain of heat from the extremities. Recognizing these facts the Morse Chain Company, Ithaca, N. Y., placed steam pipes in the concrete floors and heats the rooms from the floors.

The writer remembers only one complaint made on account of the effect of the hard surface of a floor upon the workman, and this was in the case of concrete stairways. The weight of the man in question was considerable, and he had charge of work on several floors, obliging him to go up and down concrete stairways many times a day. He had the habit of running down stairs, and the hard concrete surface jarred him and gave him trouble with his legs and back. He had the treads surfaced with maple plank, after which he had no more trouble.

It is true that concrete is somewhat harder than any other floor surface to which we are accustomed, with the exception of metal plates, and yet it does not seem to have any bad effect due to hardness of the surface, and when the slab is warmed we find but few complaints of any kind. If the slab is much colder than ordinary room temperatures it is advisable to place wooden slat floors, boards, rubber mats, or pieces of linoleum in front of machines where operators have to stand still for many hours, but generally in upper floors this is not necessary.

(To be continued)

The Michigan Stove Company

Reports submitted at the annual meeting of the stockholders of the Michigan Stove Company, held in Detroit, January 31, show a 10 per cent. gain in the business of 1910 over 1909, though operating expenses have been considerably higher. The regular annual dividends of 7 per cent. on preferred and 4 per cent. on common stock were declared, both payable February 1. A total of $172,000 was thus distributed, $112,000 to the holders of preferred and $60,000 to the owners of common. The preferred stock amounts to $1,600,000 and the common to $1,500,000.

The officers were re-elected, as follows: President, Jeremiah Dwyer; first vice-president and general manager, George H. Barbour; second vice-president and secretary, Charles A. DuCharme; treasurer, Edwin S. Barbour; corresponding secretary, Harry B. Gillespie; sales manager, Louis B. Young. They will act with the following directors on the Board of Directors: Merrill B. Mills, C. B. DuCharme, Francis Palms, Charles L. Palms and Emmet Dwyer.

George H. Barbour takes a most hopeful view of the coming year, believing that results of the year's business will be equally as good as last year, if not better.

Additions to the Laidlaw-Dunn-Gordon Plant

Interesting Features of Two Recently Completed Structures

Some additions at the plant of the Laidlaw-Dunn-Gordon Company, Elmwood place, Cincinnati, Ohio, have recently been completed. The chief of these are the extension of the foundry building, shown in Fig. 1, and an addition to the erecting shop, illustrated in Fig. 2.

The original foundry building covered an area of 120 x 198 ft., and the new structure adds 162 ft. to this. In the addition a platform with a grated floor has been installed covering a sand pit 45 ft. square. This platform is shown directly under the crane in Fig. 1. Two Mumford & George jarring machines are located in the center of this platform, and are claimed to reduce the labor cost as compared with the former process of hand ramming over 50 per cent. It is the intention of the company ultimately to put in a system of conveyors and elevators so that the sand will be automatically carried up into overhead bins and thus lower the labor cost still further. A 10-ton Toledo crane has been installed to take care of the addition. Another special feature of the plant is the location of the superintendent's office in the center of the building, which gives him a practically unobstructed view of the entire foundry department.

The addition to the erecting shop, shown in Fig. 2, is 120 ft. wide and 298 ft. long, with a gallery on each side for storing small parts and supplies. This building is used as an assembling and shipping department and a loading track extends its entire length. This part of the shop is served by a 20-ton Toledo crane, which in connection with the track arrangement has reduced the loading cost of heavy machinery to a comparatively low figure.

As will be noticed from both of the views, the buildings have ample headroom and plenty of light. Geering Bros. & Co., Cincinnati, Ohio, installed the heating system in both of these structures, which in common with the rest of the additions are of brick and steel construction.

Fig. 1.—The Foundry.

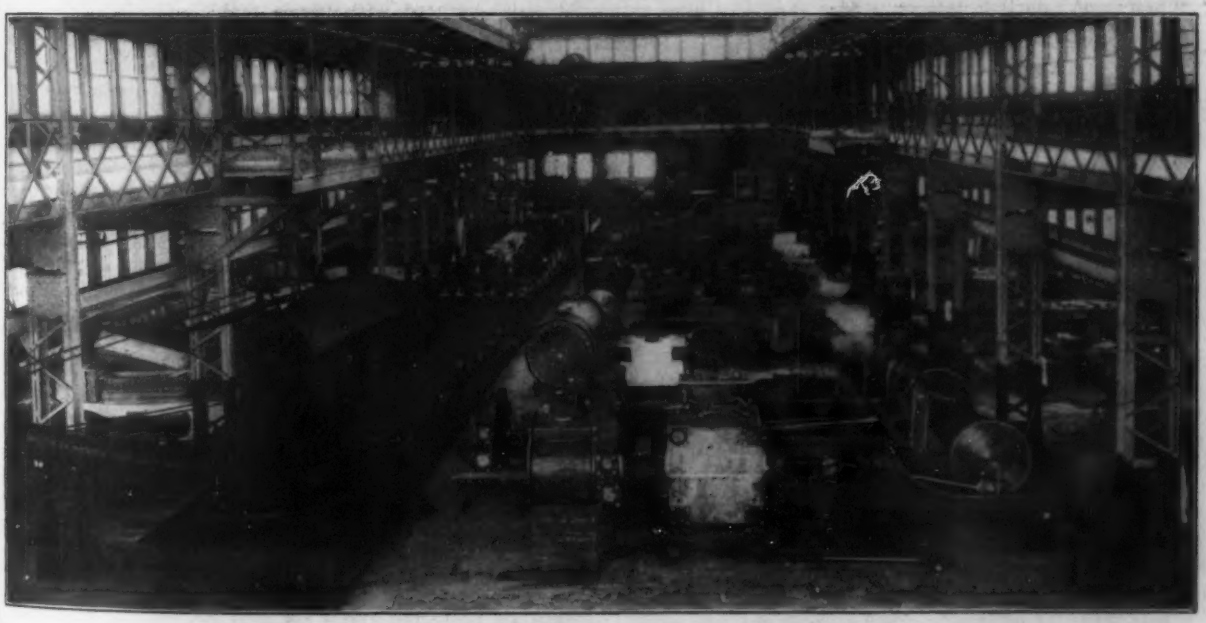


Fig. 2.—The Erecting Shop.

Two Views of the Additions to the Plant of the Laidlaw-Dunn-Gordon Company, Cincinnati, Ohio.

The Princess Furnace Company, Glen Wilton, Va., will blow in its furnace, which has been undergoing extensive repairs, in the latter part of February.

The Detroit Stoker

A New Automatic Coal Feeding Device

At the present time the tendency toward the use of boiler units of large capacity instead of installing a number of smaller ones in power plants and the more general use of coal handling machinery is increasing. This has led the Detroit Stoker Company, Detroit, Mich., to bring out a new type of automatic stoker in which reciprocating feed has been substituted for the worm conveyor type that has now been manufactured by this company for a number of years. The new stoker operates with natural draft which is claimed to be more economical than the mechanical forced draft system. A large coking surface which is nearly twice the width of the boiler is one of the most important features of this new stoker. The fuel is fed continuously and uniformly into the furnace, and, as the admission of the hot air is under control, it is possible to maintain perfect combustion, even even though low grades of coal are consumed. In this way the problem of smokeless combustion is solved and smoke-free stacks assured. It is stated that when properly installed this stoker will carry a heavy overload without smoking, and, as it is very flexible for varying loads, large momentary or peak overloads can be taken care of. Fig. 1 shows two of the stokers with reciprocating feed connected together to form a single unit. Fig. 2 is a view of the double fire brick arch, while Fig. 3 illustrates the device employed for crushing the clinkers formed during combustion. A rear view of the coal magazines is given in Fig. 4. Fig. 5 is a front view of the older type of stoker equipped with worm conveyor feed, and Fig. 6 shows the fire brick arch raised for the insertion of a coking plate.

In selecting a stoker for any particular kind of service it is necessary to take into consideration the kind and the quality of coal available, whether sufficient natural draft can be furnished to burn the amount of coal necessary to produce the steam required during the maximum operating period, the load variation and the length of time the plant is operated at its lowest capacity. All of these points are important factors in a successfully and economically operated boiler plant and should be carefully considered. When properly burned bituminous coal will not produce smoke provided the proper equipment is installed in accordance with modern ideas. The gases produced by combustion must be slowly and uniformly distilled and immediately brought in contact with heated air and in proper proportion to the rapidity with which the fuel is burned. The average saving effected by proper firing as contrasted with the ordinary methods of hand firing with unskilled labor varies from 10 to 20 per cent., according to local conditions, cost of coal and the amount of steam required. In large installations where overhead coal bunkers and handling devices are installed and operated in connection with the automatic stoker this figure is largely increased.

The Detroit stoker is driven by an automatic engine of approved design and very heavy construction. An

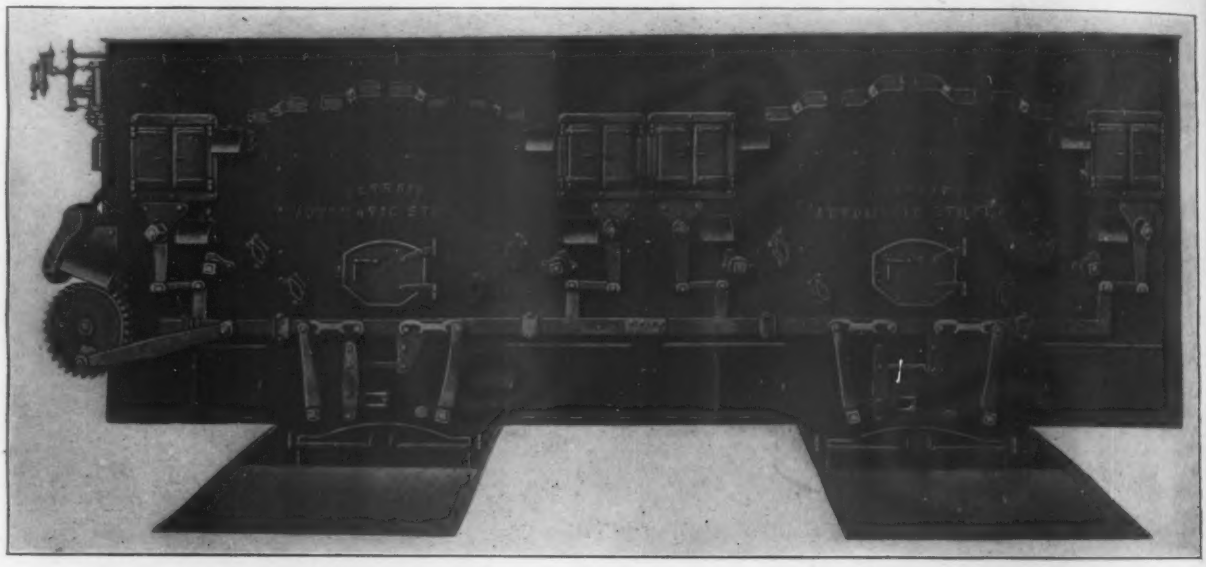


Fig. 1.—Two Stokers with Reciprocating Feed Made by the Detroit Stoker Company, Detroit, Mich.

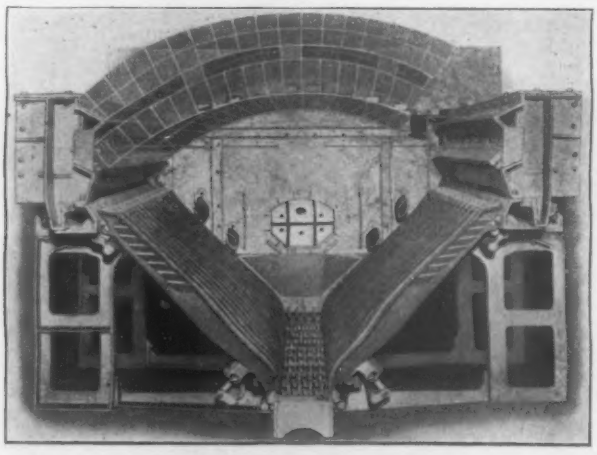


Fig. 2.—The Double Fire Brick Arch of the Stoker.

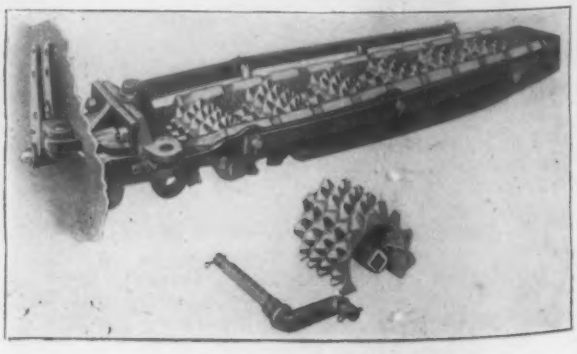


Fig. 3.—The Device for Crushing Clinkers.

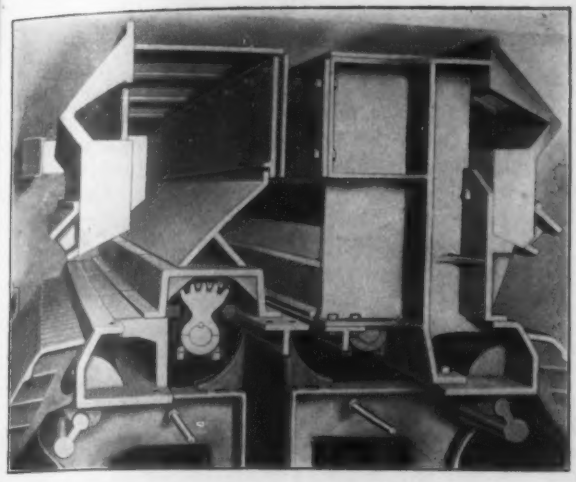


Fig. 4.—A Rear View of the Coal Magazines.

automatic flywheel governor regulates the speed of the engine and stoker to suit conditions. This device is said to be a decided improvement over the old style of throttling governor, which was uncertain in speed control and not economical to operate. For single boilers or batteries of two small units the single cylinder engine is used, while for larger installations the double cylinder engine is used. The engines are noiseless in operation and can be furnished completely hooded. When so desired the stoker can be operated with a variable speed motor. All worms and gears are protected by guards ,which render them safe to operate, and at the same time insure clean and constant lubrication. Fig. 1 shows a front view of two stokers with reciprocating feed and the operating bar and connections.

The double arch of special fire brick used in the construction of the stoker is illustrated in Fig. 2. Air is admitted through several openings in the boiler or stoker front and after being preheated between the two arches passes through the sectional arch supports into the furnace. The coal as it passes through the magazine is distributed along the coking plate at the upper sides of

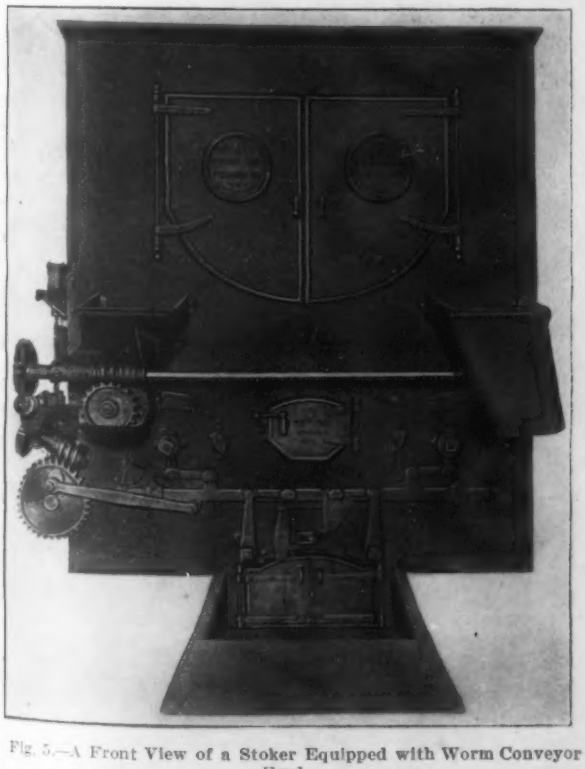


Fig. 5.—A Front View of a Stoker Equipped with Worm Conveyor Feed.

the furnace by the pusher boxes. The gaseous hydrocarbons are released here and mixed with the heated air, which is admitted in proper proportion to produce complete combustion. After the volatile matter passes off the fixed carbon or burning coke is forced slowly down the inclined grates by the movement of the vibrating grate and is entirely consumed by the time it reaches the clinker crusher, which does away with the clinkers and the ashes as fast as they are formed.

The clinker crusher, which is shown in Fig. 3, is composed of a row of heavy cast iron disks, 10 in. in diameter. These are connected with the front driving bar and rotate alternately toward and from each other, crushing the clinkers and depositing them in the ashpit. The grinding motion of the disks makes them easily operated and the clinkers are readily crushed. The speed of the clinker crusher can be easily regulated during the operation of the stoker, according to the volume of ash and clinker in the fuel. Each crusher disk can be readily replaced, when burned or broken, without disturbing the others. This makes it convenient to handle and reduces the cost of repairs. The exhaust from the engine operating the stoker is discharged between the clinker crushers at regular intervals to cool them and to make the clinkers easy to grind.

The pusher boxes are operated by a shaft extending through the front of the stoker and connected with removable links to the operating bar. A rear view of two coal magazines with reciprocating feed is given in Fig. 4, the left side showing the interior and operation of the pusher boxes with sectional segment gears and coking

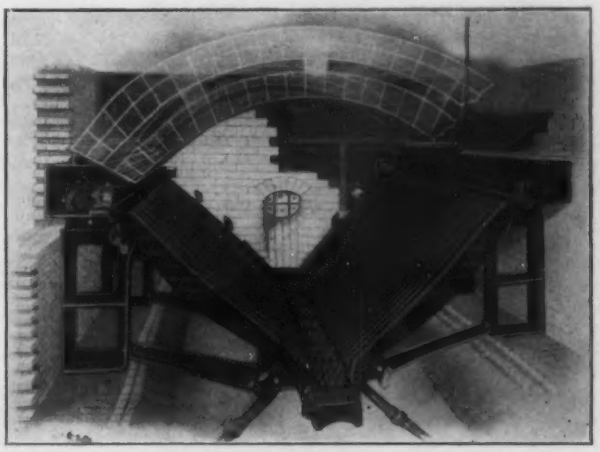


Fig. 6.—The Fire Brick Arch Raised for the Insertion of a Coking Plate.

plate. If the coal is shoveled into the magazines by hand through the front the movable slides at the top may be closed. The right side shows the air passage under the coking plate, the rear fire brick wall forming an inclosed air chamber.

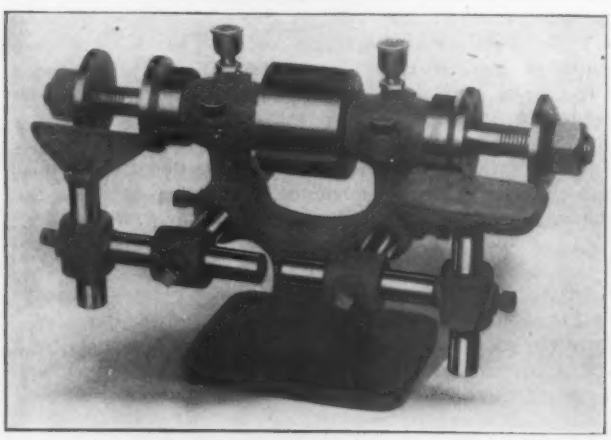
The grate bars are of two kinds, vibrating and stationary. The movement of a vibrating grate bar between the stationary ones eliminates the necessity of poking the fire, which would have a tendency to produce smoke. Each alternate grate bar is operated by the driving bar in front, and may be disconnected when a non-coking or free burning coal is used. The movement of the vibrating grates prevents clinkers from forming on the bars, and at the same time moves the bed of the fire down toward the center of the furnace. An entirely new feature of the Detroit stoker, which it is claimed is not found in any other stoker of its type, is the fact that the two types of grate bars are entirely independent of each other, making it possible to remove and renew any grate bar without disturbing any of the others. The vibrating grates rest on a bar at their upper end, so that they can be vibrated from the top as well as from the bottom. This feature, which, it is said, is not contained in any other stoker, makes it possible to loosen up the fire quickly in response to a demand for more steam, and does away with a large amount of poking. The vibrating bars move slowly, merely loosening up the fuel in the fuel bed for the admission of air. The stationary grate bar is constructed with deep flutings, so designed as to do away with an appreciable amount of sifting of unconsumed fuel, which was an objectionable feature in earlier designed stokers of this type. The large cooling surface on the grates and the admission of

air under the coking plates prolongs the life of the equipment.

The worm conveyor type of Detroit stoker is designed for small plants, especially when the coal is to be shoveled into the hoppers from the floor by hand, and is usually used when the floor space will not permit of the Dutch oven setting. A front view of the stoker with worm conveyor feed is shown in Fig. 5. This type is furnished either with or without the upper half boiler fronts for horizontal tubular boilers, or lower half fronts for water tube boilers. On the sides of the stoker front are the hoppers, which may be filled either by hand or coal handling machinery. From these hoppers, which have a capacity of 400 lb. each, the coal is fed into the magazines continuously by ball bearing worm conveyors. The magazines are in one piece, thus preventing the fine coal from sifting through into the ashpit. The gears operating the worm conveyors are continuously lubricated by running in oil, and are covered with shields, which keep them free from dust and dirt. The coal conveyors have a front end thrust ball bearing, are operated by the upper shaft in front at a slow speed and distribute the coal evenly at the upper end of the inclined grates on a coking plate, as is shown in the rear view under the temporarily raised arch brick in Fig. 6. Either one or both conveyors can be thrown out of commission during operation by disconnecting the clutch gears from the small lever in front of the hoppers, thus regulating or stopping the feed on either one or both sides of the fire, as the conditions may require, while the operation of the grates and the clinker crusher continues. By removing the hopper head the conveyor can quickly be taken out or replaced. The clinker crushers and the grates are designed and operated the same as in the stokers having the reciprocating feed.

The North Wales 8-In. Grinder Head

A new type of grinder head is being manufactured by the North Wales Machine Company, Inc., North Wales, Pa. This tool is intended to mount two grinding wheels, one at either end of the spindle, having a maximum diameter of 8 in., a face 1 in. wide and a center hole ¾ in. in diameter. Long dustproof bearings, which are split on one



A Belt Driven Grinder Head Made by the North Wales Machine Company, Inc., North Wales, Pa.

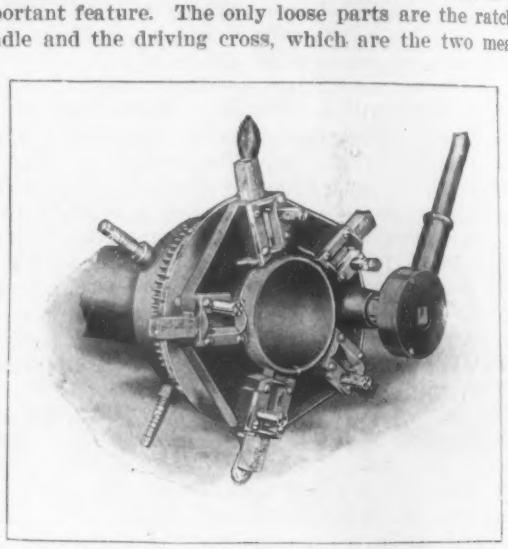
side and capped, are used. The caps have liners and are held in place by hexagon cap screws. The spindle is 14 in. long and ⅞ in. in diameter in the bearings, which are ¾ in. long. The pulley driving the spindle is 2¾ in. in diameter and its face is 2⅛ in. wide. The diameter of the spindle between the grinding wheel flanges is ¾ in. and the distance between these flanges is 1¾ in. The tool has knuckle jointed rests, with bored, turned and polished knuckles.

Swedish Tool Steel Agencies.—The Söderfors Bruks Aktiebolag (Söderfors Works, Ltd.) of Falun, Sweden, for which company Horace T. Potts & Co., Philadelphia, Pa., are the general sales agents for the United States, has found such a growing demand for its fine Swedish tool steels, both Rekord high speed and Soderfors Best, and other carbon steels, Paragon Swedish solid steel anvils, &c., that it has become necessary to arrange for stocks in different parts of the country. C. A. Gridley has been appointed sales agent for New England and is carrying a full line of all grades of tool steels, anvils, &c., at 251 Causeway street, Boston, Mass. For Chicago territory Kent & Simpson, 317 South Clinton street, Chicago, are selling agents for the company's tool steels, and also keep a full stock of all grades.

New Toledo Pipe Threading Tool

A new pipe threading tool has been placed on the market by the Toledo Pipe Threading Machine Company, Toledo, Ohio. This is a new type and size and cuts threads ranging from 2½ to 6 in. with one set of dies. It was brought out to supply the demand for a tool between the No. 2 and the No. 3 threading tools made by this company and is known as the Toledo No. 25.

Simplicity characterizes its construction and is an important feature. The only loose parts are the ratchet handle and the driving cross, which are the two means



The No. 25 Pipe Threading Tool Made by the Toledo Pipe Threading Machine Company, Toledo, Ohio.

furnished for operating the tool. The customary cam plate construction is not employed. Recourse is had to the taper pin principle for making the dies recede. The dies are shifted easily and positively by hand. In changing the position of the dies a spring bolt engages a rack that in turn engages a taper pin providing the receding motion for the dies. This, it is claimed, produces an ideal thread. Two sets of dies are furnished and when one becomes dulled they can be removed from the die holder and reground while the other set is substituted.

The Philadelphia Foundrymen's Association

The regular monthly meeting of the Philadelphia Foundrymen's Association was held at the Manufacturers' Club on the evening of February 1, Vice-President Dr. Elmer E. Brown occupying the chair. The committee on the "Yankee Party," attending the annual dinner of the New England Foundrymen's Association, January 11, made its report through Dr. Brown. All who participated commended highly the hospitality and good cheer extended by the New England Association. The application of the American Pattern Company, Philadelphia, represented by W. W. Parry, for membership in the association was favorably acted upon.

The paper for the evening was on "Arc Lamps, with Special Reference to the Flaming Arc," by K. A. Albrecht, New York City. Mr. Albrecht illustrated by lantern slides various types of arc lamps, showing the development of the flaming arc type and also exhibiting several flaming arc lamps of the types used in foundries, machine shops and other places of large area, difficult to illuminate. The author was given a vote of thanks. After adjournment a luncheon was served in the dining room of the club.

The Noyes T Square

To effect a saving in the amount of time and labor required to make drawings and to enable any desired size of drawing to be made without causing the draftsman to stoop over, the Emmert Mfg. Company, Waynesboro, Pa., has designed the Noyes vertical or horizontal T square. This instrument gives the draftsman in one self-contained unit a combination of the usual T square with scales and triangles, thus reducing the number of moves he must make in laying out a drawing to the smallest possible number, while at the same time an outfit is provided which enables him to make full size drawings of almost any size of machine while either sitting or standing, without bending over the drawing table. Another great advantage of this instrument is that it is possible to make full size drawings of large machines both accurately and conveniently, which is an advantage to the designer, as it assists him in getting the proper proportions, secures accuracy and enables him to locate the operating mechanism so as to have it handy and within easy reach. Fig. 1 shows the T square and Fig. 2 is a view showing its use on a vertical board.

The essential part of this instrument is a vertical T square, combined with a vertically adjustable protractor, which carries interchangeable scales, the whole being guided by a steel track. As will be noticed from Fig. 1, the head of the T square consists of a steel plate having a set of four rollers, which ride upon a straight steel track. This track is fastened at the top of the drawing board either to the board itself or to an independent strip, if interchangeable boards are used. The traveling head cannot become detached from the steel track, but can be easily removed at either end. One pair of rollers is beveled and runs upon ball bearings. These bearings are so arranged that the weight of the head, the T square and the protractor holds the upper rollers against the track, thus making possible a free and sensitive movement.

The weight of the protractor is counterbalanced in either one of two different ways. In the smaller machines a silk line is wound upon a spring balanced drum, the tension of which is easily changed to suit the angle of the board. The spring in the drum operates only under tension, and when the drum reverses it releases automatically to prevent breakage. In the larger machines which are intended for use on vertical or vertically inclined boards a sliding weight operating upon the brace of the T square serves to counterbalance the weight of the protractor and the scales. The line is attached to the former, thus aiding to hold it against the T square and counterbalance its weight.

Two rollers guide the protractor and are aided by two additional ones held against the T square by a tension spring. In this way the protractor is held firmly against the blade by tension, but can be readily detached for joining points at no special angle. It is also very stiff against any spring from the blade or downward movement. This combination of protractor and T square provides for accurate vertical and horizontal motion. A forked arm is pivoted to the sliding protractor and carries the interchangeable scales which are attached to it at right angles to each other. A worm, which is shown in Fig. 1 at the left of the junction of the two scales, is also mounted on this arm. The worm engages notches cut on the periphery of the protractor, which are spaced 3 degrees apart, thus making the instantaneous setting of the protractor to any multiple of 3 degrees possible. An adjustment of this nature is being made in Fig. 2. It is also possible to lift the worm out of mesh with the protractor easily and quickly. The notches on the periphery of the protractor are spaced 3 degrees apart, as this includes all the angles most commonly employed, such as 15, 30, 45, 60, 75 and 90 degrees, while at the same time the 3-degree angle is convenient, as it is not only the common draft given to patterns, but can also be used to represent the conventional angle of screw threads. The neck of the worm is graduated in 12 divisions, each representing 1-12 degree, which gives as fine an adjustment as is ever needed in drawings. Other desired graduations can be obtained by the used of interchangeable scales.

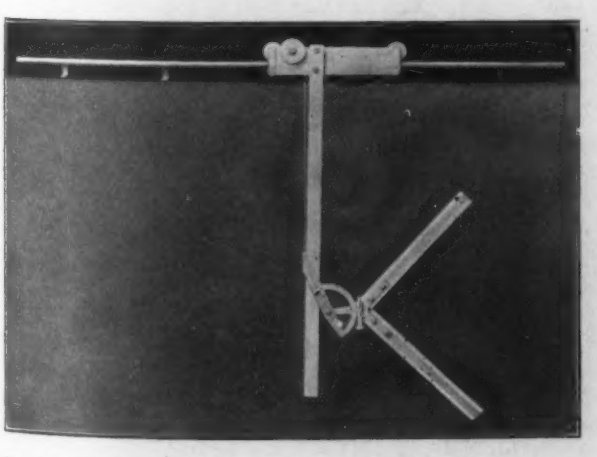


Fig. 1.—The Noyes Horizontal or Vertical T Square Made by the Emmert Mfg. Company, Waynesboro, Pa.

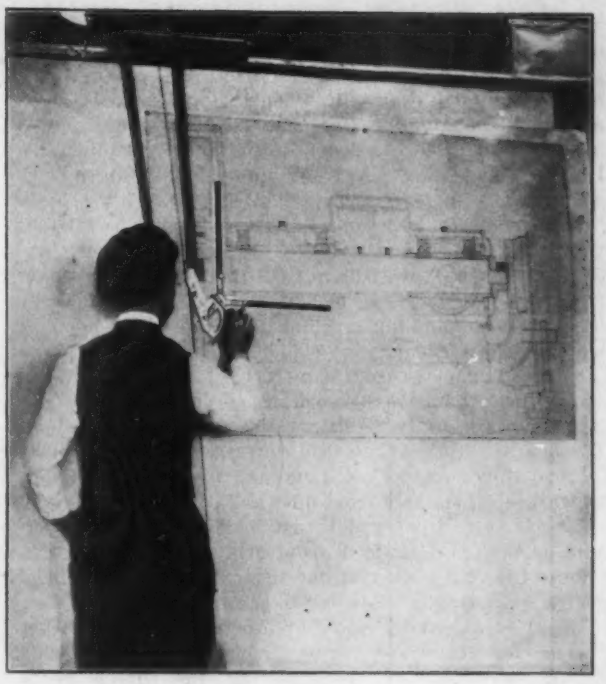


Fig. 2.—View Showing the Use of the Square.

In operation the instrument is held between the thumb and the first or second finger of the left hand, which is the natural position for vertical movement along the blade of the T square or horizontally along the track. When making settings for any desired angle the worm is thrown out of engagement by the right hand, as shown in Fig. 2, and the scales swung until the pointer indicates the proper angle. If no particular angle is required and it is simply desired to join two points, the protractor is swung far enough to the left to disengage it from the blade when it can be moved to any desired position.

The use of the instrument is by no means confined to the vertical position, as it is equally suitable for use on smaller boards in the ordinary horizontal or inclined positions which gives it the name vertical or horizontal. One of the greatest conveniences is the fact that it may be used on vertical board to do away with the inconvenience of holding triangles, scales, &c., as all these instruments are combined in one. In this way the advantages of the vertical board are made available, and, owing to the vertical position of the square, it may be made much shorter than when it is guided from the left side of the board, which insures greater accuracy.

It is stated that the total cost of power, labor, furnace upkeep, general expense and electrodes necessary for the operation of the Girod electric furnace at the Cockerill Works, at Seraing, Belgium, is under $4 a ton. The output consists of steel for tanks, locomotive tires and car axles.

Diamond Boiler Repair Bolts

In the past it has been impossible to repair boilers where corrosion has occurred in spots, and caused leaks to develop. Soldering would not do any good, as the expansion and contraction of the metal as it was alternately heated and cooled prevented the solder from adhering. To enable permanent and satisfactory repairs to be made the Diamond Expansion Bolt Company, 90 West street, New York City, has developed a boiler repair bolt.

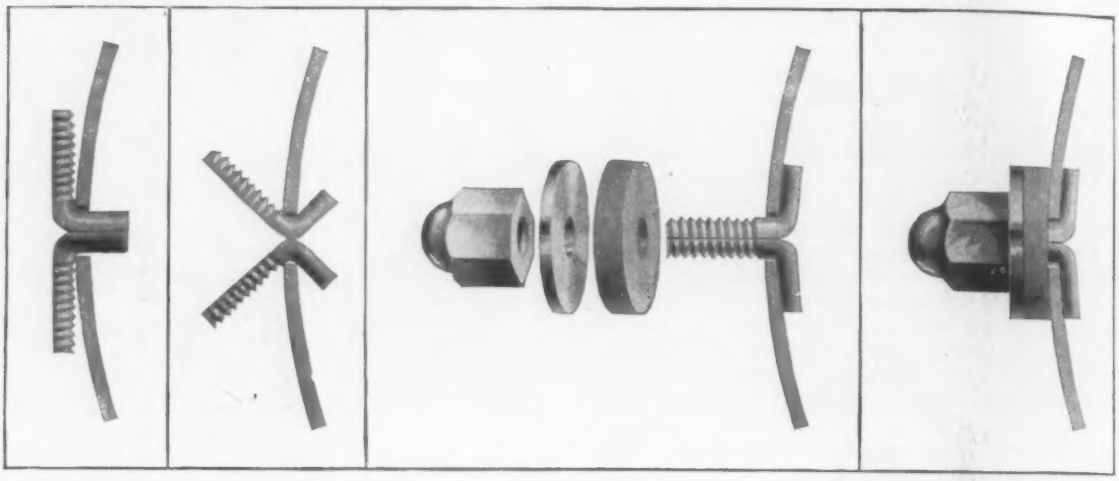


Fig. 1. Fig. 2. Fig. 3. Fig. 4.

Successive Stages in Repairing Leaky Boilers with the Diamond Boiler Repair Bolt Made by the Diamond Expansion Bolt Company, New York City.

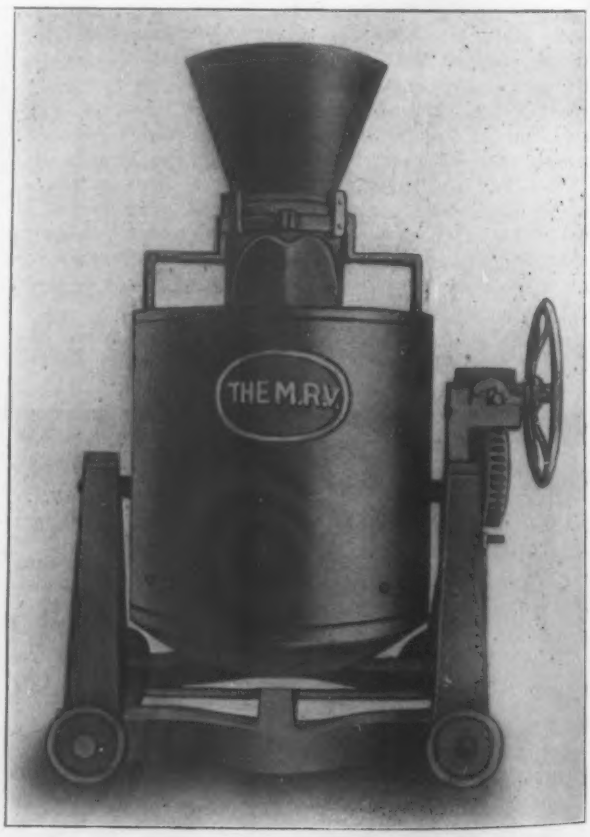
In use the operation of this bolt is very simple. The hole is first reamed out to the proper size, and a Diamond bolt, which is a separable T bolt, is inserted, as shown in Fig. 1. In Fig. 2 the bolt is illustrated, with the two halves separated, as it is being put in the proper position to stop the leak. After the threaded portions of the bolt have been brought together a hard rubber washer is placed over the bolt and against the shell of the boiler. A steel washer comes next, and finally a bonnet or cap nut is screwed down tightly upon them. The various washers and the cap nut are shown in relation to each other in Fig. 3, and Fig. 4 gives an idea of how the completed repair looks.

The M. R. V. Brass Melting Furnace

A new crucible tilting type brass melting furnace is being manufactured by J. B. Wise, Watertown, N. Y. The special advantages claimed for this furnace are rapidity of production, economical operation and a reduction in the amount of metal wasted.

In its construction it is a combination of the old style pit fire put in portable form and using coke as fuel, with a crucible for holding the metal. This is said to result in a new crucible type furnace, having all the advantages of the old style pit fire, with none of its disadvantages. An air blast operating at a pressure of less than 2 oz. per square inch provides for combustion, and the reduction of metal is very rapid, a heat of 440 lb. being easily taken off in one hour after the first heat. After the metal has melted to the proper point the air is shut off. This eliminates one of the disadvantages of the pit fire, which causes the metal to be oxidized by the natural draft of the chimney if for any reason the metal is not poured at once after being brought to the proper heat. The combustion is said to be so complete that the amount of refuse after a day's work will not exceed a small wheelbarrow load, and as the amount of fuel necessary to run six or eight heats a day is less than 500 lb., the objectionable feature of using coke for fuel on account of the space occupied and the time required to charge the furnace is practically eliminated. The manufacturer guarantees that the fuel cost will not exceed 5 cents per 100 lb. of melted metal and in some cases this figure has been reduced to less than 4 cents.

The construction of the furnace is such that it can be easily cleaned after operating. There are no grate bars to get out of order, and it is not necessary for men to start the furnace one or two hours before the regular time in order that it may be in condition for the day's work. It is also stated that the furnace is much cooler than any other device for melting metal. Less than ½ hp. is required to supply the air for operating the furnace. If the crucibles are properly treated before being placed in the furnace and ordinary good care is taken of them in operation their life is very long. The average number of heats obtained by users is in excess of 70, and at the plant of the Nelson Valve Company, Chestnut Hill, Pa., 135 heats were obtained from one crucible. Tests made on metal melted in this furnace showed a tensile strength of 10,000 lb. per square inch over brass melted in an oil fired furnace.



The M. R. V. Crucible Tilting Type Brass Melting Furnace Made by J. B. Wise, Watertown, N. Y.

The Pels Deep-Throated Power Punch

A recent installation of a deep-throated power punch made by Henry Pels & Co., 90 West street, New York city, was in the tender department of the Baldwin Locomotive Works, Philadelphia, Pa. Fig. 1 shows the operating side of the tool, while Fig. 2 is a rear view. Aside from the exceptionally deep throat the tool possesses some unusual features, such as an economical consumption of power, light weight and an exceptionally narrow frame.

As will be noticed from the engravings, the driving, as

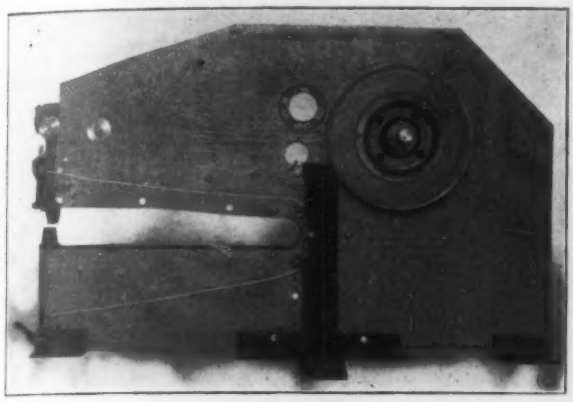


Fig. 1.—Operating Side of a Deep-Throated Power Punch Built by Henry Pels & Co., New York City.

well as the operating mechanism, is located parallel with the frame, and the ram is actuated by a powerful lever instead of the customary crank shaft. This feature results in a saving of a considerable amount of power, as a 4-hp. motor is all that is needed to operate the punch when working at its maximum capacity. The ram actuating lever and the connecting links are steel forgings and cast steel is used for the main gears, which, together with its pinion, is protected by gear guards. The long lever at the right of Fig. 2, which enables the operator to raise or lower the ram at will, without starting the machine, and permits him to locate work under the punch, is another feature worthy of special mention. The power may be thrown in by either hand or foot, as shown in Fig. 1, the hand lever being located on the ram housing, where the wire cable terminates.

The entire absence of noise or vibration, coupled with its light weight, 22,000 lb., is a decided advantage. In this particular instance the punch was located on the third floor, which is rather unusual for a tool of this size, the general location being on the ground floor. All

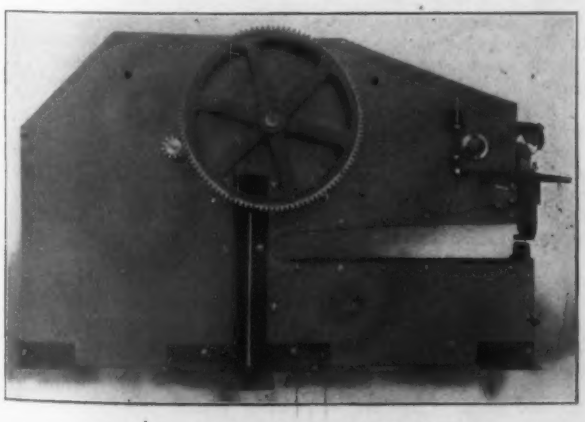


Fig. 2.—Rear View of the Punch.

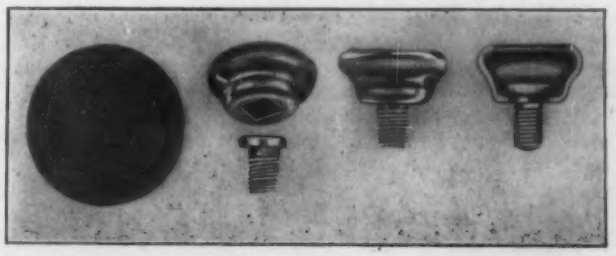
the movements of this machine take place with great precision and smoothness.

Like the combined punch and shear which was illustrated in *The Iron Age* December 29, 1910, and the other machines manufactured by this company, its frame is constructed of rolled steel plates, and, with the exception of the flywheel and a few insignificant parts, no cast iron is employed. This steel possesses a tensile strength of 90,000 lb. per square inch, and by its use the designer was enabled to construct an exceptionally narrow and comparatively light frame without sacrificing the usual factor of safety in the least. This very narrow frame combined with the exceptionally deep throat enables any size of sheet to be handled without many changes of positions, and is said to have resulted in some very interesting rapid punching at the Baldwin plant. The punching capacity of the machine is a hole 1 in. in diameter in 1-in. material and its depth of throat is 72 in. The overall length is 12 ft., the maximum hight 9 ft. and the extreme width over the brackets on the base 5 ft. This type of punch is manufactured in a variety of sizes and styles, both larger and smaller, and also with varying capacities. In the construction of the punch the manufacturer has taken care to look after practically every detail. The dustproof bearings are of ample proportions, and are lined with carefully fitted bearing metal. Grease cups furnish the necessary means for lubrication, and for handling the machine itself two holes have been located in the upper part of the frame.

The Hart Hollow Cap Screw

The H. C. Hart Mfg. Company, Unionville, Conn., has brought out a type of hollow drawn cap screw which weighs about half as much as the old solid head type. This screw is made in four sizes in both steel and brass for use in the manufacture of small tools, automobile dry batteries and various other articles.

The successive stages in its manufacture are clearly shown in the accompanying engraving. A circular piece of metal is cut as shown at the left, and is cupped into a hollow shell with a square hole punched in the base.



Successive Stages in the Manufacture of a Hollow Cap Screw Made by the H. C. Hart Mfg. Company, Unionville, Conn.

The upper part of the shell is next cupped down and knurled. After this a screw with a square shoulder is inserted in the hole and swaged securely in place. The two parts of the cap screw are shown next to the left end, the third view to the right shows the completed screw, and the one at the extreme right is a section showing how the screw is kept in place in the head.

The Sullivan Machinery Company Makes Some Changes.—The Sullivan Machinery Company, 150 Michigan avenue, Chicago, announces the appointment of Howard T. Walsh as manager of its London office. J. C. West, sales engineer at the company's general offices for the past 10 years, replaces Mr. Walsh as Pacific Coast manager. The San Francisco office of the company is now at rooms 308-309 Sheldon Building, 461 Market street. A branch office has been opened in the Hutton Building, Spokane, Wash., with Austin Y. Hoy in charge, who will represent the company's interests in the Northwest. Stocks of Sullivan machinery will be carried as at present in Seattle, Wash., and Nelson, British Columbia, by the United Iron Works and the Nelson Iron Works, respectively. A large stock of machinery will also be maintained at Spokane. The company further announces that it will hereafter carry a stock of air compressors, rock drills and hammer drills with the Wallace Supply Company at Wallace, Idaho, for the benefit of the mines in the Coeur d'Alene district.

The Engineers' Club of Philadelphia has elected the following officers for the coming year: President, James Christie; vice-president, W. L. Plack; secretary, W. Purves Taylor; treasurer, F. H. Stier.

New Tools and Appliances

This is essentially a news department for which information is invited.

Metal Scrap Shear.—The Danville Foundry & Machine Company, Danville, Pa., is building a portable shear for cutting scrap material, which is mounted on a four-wheel truck for moving about. Ten-inch knives are used which have four cutting edges, thus making one set really equivalent to four. The capacity of shear is 1½ in. for round iron and soft steel and 1¼ in. for square material. Cut gears are used throughout with the exception of one on the crank shaft. A ⅝-hp. electric motor, which forms an integral part of the equipment, drives an intermediate shaft through gears, and this shaft in turn transmits power to a crank shaft connected by a pitman to the movable shear.

A 24-In. Planer.—The Putnam Machine Company, Fitchburg, Mass., has developed a motor driven planer for handling work 24 in. square. The construction of the table is heavy with large pockets at each end. Three T-slots are provided as well as the ordinary reamed bolt holes. The trip latch on the shipper dog permits the table to pass without changing the position of the dogs. The traverse of the head is 10 in., and the adjusting screw has a micrometer dial. Work from 5 to 10 ft. in length can be accommodated by the various sizes of tool.

Metal Sawing Machine.—A cold sawing machine for rapid and accurate cutting of all sizes of stock up to 3 in. in diameter has been placed on the market by the Taylor-May Machine Company, Rochester, N. Y. The spindle which is 3 in. in diameter at the large end is driven through bevel gears and a worm and worm wheel from the driving pulley. It is pack hardened and ground, and runs in taper bearings which are adjustable to compensate for wear. The machine is regularly equipped with a semihigh speed steel saw, but saws made of any particular brand can be supplied.

Attachment for Cutting Key Ways.—The Ritter Machine Company, Sedalia, Mo., is making a drill press attachment for cutting key ways, hand milling, &c. In operation the work is secured to the slide which is clamped to the drill press table, while the body of the attachment is fastened to the quill of the machine. The cutter arbor of the attachment is driven through a train of gearing from a bevel gear mounted in the end of the drill press spindle.

Lathe Taper Turning Attachment.—The Willard Machine & Tool Company, Cincinnati, Ohio, is applying a taper attachment to its engine lathes when so desired. This attachment is mounted upon a bracket, which is secured to the back of the carriage, and has a dovetail guide along which the adjustable taper bar can be slid to suit the various pieces of work handled. This bar swivels on the bracket, and the final adjustment in setting is effected by a screw having a knurled knob. The movement of the cross slide is controlled by a shoe which slides along the bar. Graduations at the end of the attachment permit it to be set for tapers either in inches per foot or degrees, the maximum being 3 in. per foot or an angle of 22 degrees.

Double Spindle Grinder or Polisher.—A recent product of the Osborn Mfg. Company, Cleveland, Ohio, is a grinding or polishing machine provided with two independently driven spindles, thus making it practically two machines in one. This construction makes it possible for two operators to use the machine simultaneously without interference, as the independent drive enables one to change the wheel or stop the machine while the man on the other end continues his work. The machine is adapted for polishing and buffing of large work and more especially that of stove manufacturers. The construction is strong throughout and 1½-in. round steel spindles are used. A special feature of the machine is that the front leg bends inward, providing standing room and increasing the rigidity of the tool.

Multiple Spindle Drilling Machine.—To produce a machine capable of handling a class of medium weight work such as automobile engine bases and similar parts, the Fox Machine Company, Grand Rapids, Mich., has redesigned its No. 3 multiple spindle drilling machine. The driving pulleys are located in the rear of the base and transmit power to a single pulley at the top of the column that drives the drill spindles through a change gear mechanism. This location of the main driving pulley reduces vibration when drilling to a minimum. The drill speed changes and the feed changes for the drilling table, of which there are four and six respectively, are obtained through a system of sliding gears. An extra tall column has been used with this machine to permit high jigs to be clamped to the table, and the maximum distance from the table surface to the under side of the head is 43 in., the travel of the table being approximately 13 in. less. The main bearings are of a bronze composition and have ample means for lubrication. The principal gears are of chrome-nickel steel with broad faces and those in the head are incased and run in an oil bath. Drill spindles and bearings of special construction are employed which permit holes to be drilled at the same center distances as the diameter of the drill spindles. The dimensions of the drill table are 17 x 22 in. and the drill heads can be furnished in either round or rectangular shapes for drilling from 8⅞-in. to 24 3-16-in. holes in either aluminum, cast iron or steel. The floor space of the machine is 30 x 72 in. and its overall hight is 92 in.

Trade Publications

Corliss Engines.—The Watts-Campbell Company, Newark, N. J. Catalogue. Devoted to a line of Corliss engines which are built in 26 sizes, ranging from 50 to 700 hp. The special features of these engines are illustrated and described in detail and there are a number of engravings showing the various sizes and styles of engines.

Woodworking Machinery.—The Hermance Machine Company, Williamsport, Pa. Pamphlet. Lists a number of woodworking machines, including planers and matchers, single and double surfacers, molders, stickers, mortisers, tenoners, sash and door clamps, rip and swing saws and combination saws and dado machines. In the make-up of the pamphlet the engravings of the various machines and brief specifications occupy facing pages.

Electric Motors.—The Emerson Electric Mfg. Company, St. Louis, Mo. Two bulletins. No. 3141, replacing No. 3137, points out the advantages of a new line of single phase induction motors, which are built in sizes ranging from 1-10 to 1-5 hp. The special advantage of these motors is a condensed type of frame, which enables them to be installed where the dimension parallel to the shaft is of great importance. No. 3708, replacing Nos. 3704 and 3705, gives general description and specifications for dental laboratory lathes operated by either alternating or direct current mbtors.

Milling Machines.—The Garvin Machine Company, Spring and Varick streets, New York City. Two circulars. No. 142 contains a description of the Nos. 14 and 15 vertical spindle milling machines for machining castings which require the finishing of surface joints. No. 143 refers to the use of the No. 3 duplex milling machine, one of the special advantages of which is the finishing of two sides of the work perfectly parallel at the same time. An illustrated description of this machine appeared in *The Iron Age* July 21, 1910.

Road Rollers and Contractors' Engines.—The Huber Mfg. Company, Marion, Ohio. Pamphlet. Describes with numerous illustrations a line of road rollers and contractors' engines. The construction of the special features of these rollers and engines is described at length. In addition to the regular road rollers and the engines a special type in which both are combined can be furnished.

Coal Washeriers.—Link-Belt Company, Nicetown, Philadelphia, Pa. Pamphlet. Describes the two washeriers which this company recently completed for the Central Coal & Coke Company, Dunkirk, Kan. The engravings show the machinery installed and the completed plants, as well as a number of progress pictures.

Traction Engine.—The Ohio Tractor Mfg. Company, Marion, Ohio. Circular. Concerned with a gasoline traction engine that is built in four sizes—namely, 20, 30, 45 and 70 hp. Two speeds are regularly furnished and a third one can be added if desired. The special advantages of this engine are that it is under the control of the operator at all times and the fuel consumption is very economical.

Drill Chuck.—R. H. Brown & Co., 287 Ashmun street, New Haven, Conn. Circular. Devoted to the Reid drill chuck, which has a capacity for drills having a maximum shank diameter of ⅛ in.

Triplex Pumps.—The Sandusky Foundry & Machine Company, Sandusky, Ohio. Catalogue. Shows a line of single and double acting triplex pumps arranged for operation by belt and direct connected electric motors, direct connected gasoline engines and by electric motors through gearing. In nearly

every case two pages are devoted to each of the pumps, an engraving with brief description occupying one side of the leaf while the specifications and dimensions are given on the other side. Some useful information for pump users and an illustrated description of various types of controlling devices for motor driven pumps complete the catalogue.

Grinding Wheels.—The Tanite Company, Stroudsburg, Pa. Catalogue. Size 9 x 12 in.; pages 118. Gives general description and specifications for a line of grinding and polishing wheels which are made in six standard grades, as well as large variety of special ones. Space is also given to emery cloth and paper, suction fans, babbitt metal, whet and oil stones, emery grinders, saw gummers and a number of special grinding machines.

Tool Holders.—Armstrong Brothers Tool Company, 339 North Francisco avenue, Chicago, Ill. Catalogue No. 18. Calls attention to the Armstrong tool holders, which are made in a variety of styles to receive inserted steel cutters for turning, planing, boring, slotting, threading, cutting-off and drilling metals. The special advantages claimed for the use of these tool holders and inserted cutters are a reduction in the amount of capital invested in tool steel, an increase in the capacity of the tool, as the cutters can be ground to special shapes with little loss of time or material and the ability of the user to obtain self-hardening steel cutters of stock sizes and shapes and of the brand of steel best suited to his requirements. The various types of holders and cutters are illustrated, as well as grinding machines, lathe dogs, drill holders and drill vises.

Gasoline Storage Outfits.—Tokheim Mfg. Company, Inc., Cedar Rapids, Iowa. One pamphlet. Illustrates and describes a line of self-measuring outfits for handling gasoline and lubricating and paint oils. The special advantage of this system is that all waste due to leakage and spilling is eliminated and by setting a device on the pump it is possible to discharge the desired quantity at one stroke.

Acetylene Lighting.—The Hercules Mfg. Company, Chattanooga, Tenn. Pamphlet. Concerned with street and residence lighting by acetylene. The pamphlet also describes the process of generating acetylene gas by combining calcium carbide with water, and shows the construction and operation of the Hercules generator.

Calendar.—The Wagner Electric Mfg. Company, St. Louis, Mo., has issued a calendar hanger showing the latest type of the company's motor. Unlike the majority of the advertising calendars gotten out, this is comparatively free from any advertising matter, the name of the company appearing in small type at the bottom of each leaf.

High Speed Steam Hydraulic Forging Press.—United Engineering & Foundry Company, Farmers Bank Building, Pittsburgh, Pa. Mailing card. Shows the results obtained by the use of a 500-ton press as compared with those of a 6000-lb. steam hammer. The two illustrations show the two ends of the same ingot which were treated in the different ways.

Metal Sheets.—American Sheet & Tin Plate Company, Frick Building, Pittsburgh, Pa. Three cards. These give the weights of the various gauges of corrugated roofing sheets per square, the weights per bundle for the various gauges and sizes of black sheets and also for the Apollo galvanized sheets. On the last two cards under each different gauge number are given the weight per square foot in both ounces and pounds, the different sizes of sheets made, the weight of each sheet, the number of sheets in and the weight of a complete bundle.

Threshing Machinery.—The Aultman & Taylor Machinery Company, Mansfield, Ohio. Catalogue. Illustrations and descriptive matter explain the operation of a line of threshing machinery which includes grain separators, threshers, hullers, portable and traction engines and portable sawmills.

Ball and Roller Bearings.—The Bantam Anti-Friction Company, Bantam, Conn. Catalogue. Deals with all the types of ball and roller bearings manufactured by this company. In the illustrations the bearings are printed in colors, thus giving the user an idea of the quality of the material entering into the make-up of the bearings. Many new types and forms of bearings are shown and dimension tables and price-lists of the various kinds are included. Among the various bearings covered is a pillow block which was illustrated in *The Iron Age* October 6, 1910.

Crushing Machinery.—Power & Mining Machinery Company, Milwaukee, Wis. Catalogue No. 4 and bulletin No. 9. The former deals with the McCully gyratory rock crushers, crushing rolls and accessories such as belt conveyors, elevators, screens and quarry cars. All of these various appliances are illustrated and detail dimension sheets are given for the McCully crushers. A number of suggested installation schemes complete the catalogue. The bulletin is devoted to the Evans-Waddell Chilian mill for grinding ore. Its construction and operation are described at length and an illustrated list of repair parts completes the bulletin.

Ice Making and Refrigerating Machinery.—Newburgh Ice Machine & Engine Company, Newburgh, N. Y. Pamphlet. Size 3½ x 6 in.; pages 64. Treats of a line of ice making and refrigerating machinery which includes refrigerating plants operating on the ammonia or carbon dioxide systems; accessories such as can dumps, ice hoists and cranes, ice elevators and all the fittings and fixtures used in ice factories and refrigerators, and distilling and purifying apparatus for securing pure water. All of these machines are illustrated and described and space is also given to the engines used for driving them.

Cotton Ginning Machinery.—Brown Cotton Gin Company, New London, Conn. Catalogue. Treats of a line of cotton ginning machinery and linters for oil mills. The various types of machines are illustrated and described and complete illustrated lists of repair parts are given.

Rock Drills.—Ingersoll-Rand Company, 11 Broadway, New York City. Pamphlet No. 4202. Treats of the Sargent rock drill, which is a combination of the independent air thrown spool type valve with an improved modification of the tappet action. The various parts of these drills are illustrated and described and there are a number of illustrations showing them in actual use.

Traction Engines and Threshing Machines.—The Huber Mfg. Company, Marion, Ohio. Catalogue. Calls attention to the Huber traction engines and threshing machines. Their special features are described and brief dimension tables are included.

Electric Pyrometers.—The Bristol Company, Waterbury, Conn. Bulletin No. 130. Size 8 x 10½ in.; pages 56. Illustrates and describes both the indicating and the recording types of the William H. Bristol electric pyrometer and calls attention to their special features, among which is an automatic compensator which makes the readings independent of any atmospheric changes at the instrument.

Fans and Blowers.—Garden City Fan Company, Fisher Building, Chicago, Ill. Bulletins Nos. 26, 29, 30, 32, 34, 40 and 41. Deal with shavings exhausters, blowers and ventilating fans of various types.

Elevator and Power Transmission Machinery.—Minneapolis Steel & Machinery Company, Twenty-ninth street and Minnehaha avenue, Minneapolis, Minn. Five catalogues. F is a 111-page book pertaining to the line of elevator and power transmission machinery handled and manufactured by this company. In addition to illustrating the various appliances numerous dimension tables are included. G 105 describes and illustrates the Ohio portable and stationary gas and gasoline engine, while E 103 covers the Twin City line of engines, which are made in a number of different styles and sizes. M 112 describes a complete line of power plant accessories and C 106 is concerned with condensers of both the surface and jet types.

Feed Water Heaters.—Erie Mfg. & Supply Company, Erie, Pa. Pamphlet. Shows the Riblet and Hardwick feed water heaters and explains their construction and operation with considerable detail.

Printing and Matrix Drying Presses.—R. Hoe & Co., 504 Grand street, New York City. Two pamphlets. No. 100 covers a line of rotary electrotype web perfecting presses for periodical, book, catalogue and pamphlet printing. The various sizes and styles of presses are shown and a partial list of users completes the pamphlet. No. 104 is concerned with a pneumatic matrix drying press heated by steam or electricity. The special advantages claimed for this press are a large saving of time and labor, the production of better matrices and the placing of the pressure cylinder underneath the press, which permits the pressure of the platen upon the matrix to be exerted in a direct line.

Drag Bucket Excavators.—Monighan Machine Company, 2016 Carroll avenue, Chicago, Ill. Catalogue EC. Size 9¼ x 12½ in.; pages 32. Contains a detailed description of the construction of the Monigan scraper bucket excavator, together with condensed specifications and illustrations of the excavators in use.

Wood Sawing Machinery.—McDonough Mfg. Company, Eau Claire, Wis. Pamphlet. Refers to the use of the McDonough band resaws and rip saws for the rapid production of work. The special features of these saws are described, and there are a number of illustrations.

Gas and Gasoline Engines.—The Advance Mfg. Company, Hamilton, Ohio. Pamphlet. Lists the special features of the Hamilton gas and gasoline engines, which are made in sizes ranging from 4 to 35 hp.

Feed Water Heaters and Boilers.—The Bass Foundry & Machine Company, Ft. Wayne, Ind. Two pamphlets. The first points out the advantages of using the Bass open feed water heater and purifier, while the second gives general description and specifications for horizontal and vertical tube boilers.

Concrete Block Machinery.—The Miles Mfg. Company, Inc., Jackson, Mich. Catalogue. Pertains to the Miles line of wet process concrete machinery, which includes mixers, concrete block and cement brick machines and molds for sills, caps, steps and piers. All of these machines are illustrated and for the most part the descriptions occupy the pages facing the engravings. Instructions are given as to the most economical operation of these machines, and space is devoted to a number of illustrations showing buildings constructed from blocks made on these machines.

The Machinery Markets

Railroad purchasing continues to occupy the attention of machinery sellers in the East. An extensive list has been issued to the New York trade by the New York, Ontario & Western Railroad. In New England increased business is in sight, and January proved a better month to machinery houses than November or December. Buying in Philadelphia is on a moderate scale, but there are strong indications of impending railroad buying. The trade in Cleveland is more active than for some time, and some good business has been closed, including one order for $20,000 worth of machinery. Reports from Cincinnati and St. Louis indicate that there is a decided improvement in the demand. The railroads are coming into the market in Chicago, where a local automobile show is also attracting trade. The general machinery market is better in San Francisco, and favorable action by the National House of Representatives in regard to officially recognizing the Panama-Pacific Exposition there has greatly improved the tone of trade.

New York

NEW YORK, February 8, 1911.

Inquiries for machinery continue to increase in this territory. The feature of the week was the distribution of the New York, Ontario & Western Railroad list of machine tools and blacksmith shop equipment, which is the largest railroad list that has been out in this market for three months. The Simms Magneto Company has added to its requests for bids by inquiring for special toolroom machinery, and a larger list is in preparation in the offices of that company. Work has been begun by the Delaware & Hudson Railroad on its Watervliet shops, but it is said on good authority it will be several months before a machine tool list is prepared. The company has not yet closed out the small list put in the hands of dealers two weeks ago. Its Watervleit requirements will be large, and from all accounts they will excel any list that has been put out in New York for several months. Manufacturers of foundry apparatus are handling an increased business and the foundries in general are decidedly more active. Machinery manufacturers show an increased desire to place long time contracts for castings. Two foundries in this neighborhood recorded orders for machine tool castings in the last week for delivery over the year. While about any kind of standard machinery can still be had from stock, manufacturers of some classes of machine tools declare that if inquiries now before them mature into orders they will be obliged to extend delivery terms. Many Western machine tool manufacturers and a number of New England makers handle their Southern business through their New York representatives, and machinery men from the latter territory have been very busy of late with Southern business. A number of the Southern railroads have been placing single orders for machinery for replacement. All through the South there is an excellent call for used machinery; in many cases manufacturers who have been unable to get second-hand machines have placed their orders for new equipment. The Continental Gin Company, Birmingham, Ala., has been an excellent buyer in the machine tool market. There is also a very good call in the Southern territory for outdoor equipment, such as dredges, steam shovels and contractors' machinery, used in irrigation work.

The New York, Ontario and Western List

The largest railroad list issued in the New York market within the last three months has been sent out by the New York, Ontario & Western Railroad and is in the hands of a number of dealers and manufacturers' representatives here. The list includes a complete line of machine tools and a list of equipment for a good sized blacksmith shop. The machinery required will cost fully $50,000. The company's requirements were made up by D. P. Fiory, superintendent of motive power, with headquarters at Middletown, N. Y. C. A. Draper is the general purchasing agent, with offices at 56 Beaver street, New York, and he will probably close out for the machinery, a list of which follows:

Machine Shop Tools.

1—60-in. driving wheel lathe with quartering attachment, motor driven.
1—32-in. engine lathe, 14-ft. bed, motor driven.
1—30-in. engine lathe, 12-ft. bed, motor driven.
2—24-in. engine lathes, 10-ft. bed, motor driven.
1—18-in. engine lathe, 10-ft. bed, belt driven.
6—16-in. engine lathes, 5-ft. bed, belt driven.
1 double head car axle lathe, motor driven.
1—24-in. by 6-ft. turret lathe with carriage, motor driven.
1—21-in. by 6-ft. turret lathe with carriage, motor driven.
1—3½-in. bore turret lathe, motor driven.
1—6¼-in. bore turret lathe, motor driven.
1—34-in. double head boring mill, motor driven.
1—42-in. double head boring mill, motor driven.
1—3-in. spindle horizontal boring mill, 6-ft. bed, motor driven.
1—54 x 54 in. by 12-ft., four-head planer, motor driven.
1—42 x 42 in. by 16 ft. four-head planer, motor driven.
1—30 x 30 in. by 10 ft. three-head planer, motor driven.
2—24-in. shapers, motor driven.
1 universal milling machine, 30 in. table travel, motor driven
1—72-in. radial drill, motor driven.
1—60-in. radial drill, motor driven.
1—36-in. radial drill, motor driven.
2—30-in. vertical drills, belt driven.
2—½-in. double spindle speed drills, belt driven
1 nut facing machine, belt driven.
1 nut tapping machine, 1 to 4 in., belt driven
1—3½-in. bolt cutter, belt driven.
1—1½-in. double head staybolt cutter, belt driven.
1—2½ to 6 in. pipe cutter, belt driven.
1—12-in. power hack saw, belt driven.
1—24-in. power hack saw, belt driven.
1 link grinder, belt driven.
1 universal grinder for tools and reamers, motor driven.
1 disk grinder, belt driven.
1 chaser grinder, belt driven.
1 universal grinder for lathe and planer tools, motor driven.
2—16-in. double head grinders, motor driven.
Current, 220 volts, D. C.

Blacksmith Shop Tools.

1—2-in. bolt heading, upsetting and forging machine, motor driven.
1—4-in. bolt heading, upsetting and forging machine, motor driven.
1 bulldozer, equivalent to No. 1 7 Ajax, motor driven.
1 single punch and shear, to punch 3 in. in diameter through 1½-in. steel and shear 2 x 10 in. flat bars, 1¾-in. plates and 3½-in. round bars.
Current, 220 volts, D. C.

The Mott Wheel Works, Utica, N. Y., which recently increased its capital stock from $50,000 to $150,000, has acquired a new building about double the capacity of its present plant, in which machinery is being installed for the manufacture of the company's line of automobile supplies, steel wire wheels, axles, forgings, &c. Frederick Gilbert and Charles B. Rogers, who have become stockholders as a result of the expansion, will be placed in the Board of Directors, which consists at present of Henry R. Williams, Clarence B. Williams and Q. W. Mott.

The Sillcocks-Miller Company, manufacturer of artificial leather specialties, celluloid novelties, &c., is having erected at South Orange, N. J., a three-story factory, 50 x 100 ft., with a power house adjoining. A modern ventilating system and a small power plant will be installed, and it is expected to have the plant ready for operation by May 1. W. S. Silicocks is president of the company.

The Electrode Company of America has awarded contracts for the equipment for its plant at Niagara Falls, N. Y., including a crane to be furnished by the Pawling & Harnischfeger Company, Milwaukee, Wis.; elevators and conveyors to be erected by H. W. Caldwell & Son Company, Chicago, and a crusher to be furnished by the Chisholm, Boyd & White Company, Chicago.

The Eclair Film Company, 31 East Twenty-seventh street, New York, has awarded the general contract to Donald Mitchell, 356 West Fifty-third street, New York, for the erection of a factory building, 58 x 115 ft., at Fort Lee, N. J. The plant will be used for the manufacture of moving picture films and apparatus and will cost about $24,000.

James H. Fuertis, consulting engineer, 140 Nassau street, New York, is preparing preliminary plans for the construction of a system of water works and pumping station for the town of Cranford, N. J.

Steinway & Sons, piano manufacturers, have awarded a general contract to E. E. Paul & Co., 1 Madison avenue, New York, for the erection of additions to their factory at Steinway, L. I. The plans comprise additions to the main building and two wings, 200 x 345 ft. and 200 x 315 ft. respectively.

Point Pleasant, N. J., is considering plans for establishing a municipal water works. The present plant is owned by Martin Maloney, Philadelphia.

Bids are to be received next month by the Board of Public Works, Jamestown, N. Y., for a garbage disposal plant to be erected by the city.

The Ogdensburg Terminal Company, Ogdensburg, N. Y.,

THE MACHINERY MARKETS

will build and equip a 500,000-bu. grain elevator of reinforced concrete to cost approximately $200,000. Contract for construction awarded to John S. Metcalf Company, Chicago, Ill., and 10 St. John street, Montreal.

Lortz & Teuscher, Syracuse, N. Y., manufacturer of iron bedsteads, is completing plans for a three-story factory.

The Cliff Electrical Distributing Company, Niagara Falls, N. Y., has been authorized by the Public Service Commission to issue general mortgage bonds to the amount of $250,000, to be sold at not less than 95, to be used for improvements at the company's plant.

The Elmira Water, Light & Railroad Company has been authorized by the Public Service Commission to issue general mortgage bonds to the amount of $243,995, to be used for extensions of service and improvements to the company's plant at Elmira.

The Hayes Appliance Company, Geneva, N. Y., is planning to build a new factory in western Ohio or eastern Indiana—location and site not definitely determined—the new factory building to be fireproof, about 100 x 130 ft. S. W. Hayes is president of the company.

The Grimm Mfg. Company will add to its plant on Keystone street, a one-story concrete building for testing purposes.

The Spencer Heater Company, manufacturer of the Spencer magazine-feed water-jacketed boilers for steam or hot water heating of dwellings, apartments and office buildings, has opened a sales office in Buffalo, N. Y. Mr. C. P. Wadley has been appointed manager with offices at 920 and 922 White Building.

The Pneumatic Metal Tire Company, Buffalo, N. Y., has been incorporated with a capital stock of $50,000 by Albert E. Nelson, George O. Graves and Edward L. Kunz, to manufacture automobile metal tires and appliances.

Catalogues Wanted

Gaedt & Nacker (Kratos-Werke), Erlau, Saxony, Germany, are in need of automatic grinding and polishing machines for handling small metal work and desire catalogues of American manufacturers in that line.

Chicago

CHICAGO, ILL., February 7, 1911.

The general improvement in business conditions is creating a better tone in the machinery market, although actual improvement is somewhat slow. Chicago dealers have been busy this week entertaining visitors to the automobile show. A large proportion of the out of town visitors who attend this annual event are men interested in manufacturing or shop work, and they spend a part of their time in the machinery district looking over the display rooms of the dealers. They have not done much buying, but they represent the great unknown quantity of dormant business which has accumulated in the last six months, and which will come out in the form of active orders when general trade conditions have arrived at a satisfactory basis. During the past winter there has been very little building or shop improvement going on in the West, owing to the fact that general foundry and machine shop business has been down to about half an average capacity. The lack of railroad buying has been the chief factor is depressing trade, but the railroads are now coming into the market for equipment and materials, and this long expected railroad buying movement ought to have a very favorable influence.

The American Sheet & Tin Plate Company has recently bought a small list of machine tools for shop work in connection with its new sheet mills at Gary, Ind.

Joseph T. Ryerson & Son, Chicago, have made a sale of important hydraulic riveting equipment to be installed in addition to the plant of the Western Steel Car & Foundry Company at Hegewisch, Ill.

A recent official statement of the International Harvester Company, Chicago, shows appropriations for new factory construction and equipment during the past year, at the various plants of this company, amounting to nearly $4,000,000.

The Thompson Type Machine Company, 120 Sherman street, Chicago, has increased its capital stock from $100,000 to $200,000, and is planning to increase its manufacturing facilities.

The corporate title of the Chicago Fuse & Wire Mfg. Company has been changed to the Chicago Fuse Mfg .Company and the capital stock increased from $25,000 to $100,000, all of which has been paid in. The company recently completed the erection of a six-story factory building which it is now occupying.

The business of William Weinstein has changed its name to the William Weinstein Iron Company, and will occupy offices at 601-602 Manhattan Building, 315 Dearborn street, Chicago.

The Burrell Mfg. Company, Bradley, Ill., founder and machinist, has increased its capital stock from $50,000 to $75,000 to provide for its increasing business.

The Macomb Sheet Metal Works, Macomb, Ill., has purchased ground upon which it will build a factory in the early spring. Dimensions of building have not yet been decided upon.

Lawrence Brothers, Sterling, Ill., are having plans prepared for a new factory, work upon which will be started early in the spring.

The Sibley Elevator Company's elevator, at Bloomington, Ill., was destroyed by fire January 29, causing a loss estimated at $100,000.

The Mackinaw Sand & Gravel Company, Lincoln, Ill., has placed a contract with an Aurora, Ill., engineering firm to place an entirely new screening equipment in the plant.

The Bridgeport Light & Power Company, Bridgeport, Ill., has been incorporated with a capital stock of $20,000. The incorporators are R. D. Donnelly, W. E. Beyhan and B. H. Lytle.

The Consolidated Concrete Tie Company, Cairo, Ill., has been incorporated with a capital stock of $100,000. The incorporators include Richard J. D. Cowan, Joseph R. Sneed, Daniel W. Heilig and others. The company will engage in the manufacture of reinforced concrete railroad ties.

The Barry Electric Light & Power Company, Barry, Ill., has been incorporated by F. Frike, W. L. Klein and A. R. Weeks.

Philadelphia

PHILADELPHIA, PA., February 6, 1911.

Buying continues on a very moderate scale and conditions in the market show no appreciable change. Reports from both manufacturers and merchants indicate that business during January was unsatisfactory, as far as volume was concerned. Inquiry so far this month has not improved to any material extent, although the trade looks forward to some betterment in the near future and feels encouraged by more favorable reports regarding railroad work, even though the movement in this immediate district continues restricted. Little buying of importance develops from plant extensions, although some inquiries for tools have come out; in the majority of instances, however, the individual requirements are small. Very little railroad business comes out in this district; in fact, the few inquiries that have recently developed have not materialized in the shape of orders. Activity with machinery builders, foundries and industrial plants is still restricted, and until these industries become more fully engaged, the demand for machine tools is hardly expected to show any marked increase, particularly as existing conditions are hardly conducive to the building of additional industrial establishments, which would be likely to require any extensive machine tool equipment.

Builders of machine tools report a slightly better inquiry, particularly for special tools, and while some scattered orders have been taken, plants continue to operate on a greatly reduced basis. Boiler and engine builders report a little better inquiry, but resultant orders have not been large. Second-hand machine tool merchants note a moderate improvement in the demand, but without any material betterment in actual orders.

The Pennsylvania Railroad has sent out inquiries during the week for a large axle trueing machine.

J. J. Crowley of this city and John G. Gray of Wilmington, Del., have been appointed receivers for the Screw Cutting Company of America, Philadelphia. Proceedings were instituted by Edwin W. Crellin, insolvency being alleged.

The Vulcan Brazing & Machine Company, 310 North Sixteenth street, this city, has surrendered its New Jersey charter, and has been incorporated under the laws of the State of Delaware, with a capital stock of $10,000. The officers of the company are Richard Eckersley, president; C. M. Beddall, secretary and treasurer, and J. R. McCormick, general manager.

The Newton Machine Tool Works, Inc., is in the market for a countershaft level, with vertical and horizontal glass, to be used with a transit or a fixed center. The instrument desired also has an arrangement for suspending it from a line or countershaft.

Savery, Sheets & Savery, architects and engineers, have completed plans for a three-story brick and reinforced concrete garage and delivery station, 80 x 115 ft., to be erected at Sixty-second and Locust streets, for Strawbridge & Clothier.

The Philadelphia & Reading Railroad is proceeding with plans for the erection of a large concrete bridge over the Delaware River at Yardley, to replace its present bridge at

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that point, which is insufficient for its increased traffic on its Bound Brook Division. Preliminary plans have been completed and are now being considered by the Government.

A considerable portion of the plant of the Barrett Mfg. Company, at Thirty-sixth and Reed streets, manufacturer of roofing materials, was damaged by fire on February 4. At this time it is impossible to learn definitely as to the extent of the damage to its power plant and machine shop, but it is reported that the former was badly damaged.

The contract for the Vine street pier, bids for the erection of which were recently opened by the Department of Wharves, Docks and Ferries, previously referred to in this column, has, it is stated, been awarded to W. S. P. Shields, who was the second lowest bidder, and who also had the contract to build the substructure of the pier, at his bid of $339,000. The lowest bidder, it is reported, refused to agree to the wages and hours of labor required by ordinance of City Council. The pier will be double decked and specifications will permit of the erection of two more floors if desired.

Franchises are being obtained for the construction of an electric railroad extending from Slatington to Lehighton, Pa., a distance of 12 miles, which will complete a continuous extensive electric system in the Lehigh Valley. Bridges over the Lehigh River, the Lehigh Canal and over the tracks of the Central Railroad of New Jersey and Lehigh Valley railroads are proposed. The new line will connect with the Carbon Transit Company at Lehighton and the Lehigh Traction Company Lines at Slatington.

The Manheim Mfg. & Belting Company, Manheim, Pa., has been organized with a nominal capital stock. The company will manufacture the Veelos Balata belt, which has formerly been imported by the Charles Bond Company of Philadelphia. The officers of the company include Charles Bond, president; George H. Danner, vice-president; M. M. Pfantz, secretary and H. G. Hess, treasurer. The company is planning the erection of a building.

The Universal Mfg. Company, Freeport, Pa., has been incorporated with $100,000 capital stock. The company will build and equip a plant with engines, boilers and machinery for the manufacture of enamel ironware. J. C. Stevick is president of the company.

Justice Cox, Jr., & Co., Land Title Building, are in the market for 30 logging cars and 6 flat cars.

Cincinnati

CINCINNATI, OHIO, February 7, 1911.

Business during the past week with a number of machine tool builders has shown a decided improvement. An Eastern manufacturing concern placed a nice sized order in this market for tools, and it is stated that this same company will make further purchases later on. Orders continue to come mainly from the general trade, and the railroads are yet buying sparingly.

The foundries are not very actively engaged, but there are signs of a favorable change, and if the machine tool trade continues to improve they will doubtless be operating with full shifts by the opening of spring.

Second-hand machinery is in better demand, but no large sales have been made lately.

The coming annual meeting of the Cincinnati Branch, National Metal Trades Association, March 2, promises to be one of the largest in its history. Among those who have already signified their intention of attending are F. C. Caldwell of the H. W. Caldwell Mfg. Company, Chicago; H. H. Latham, Latham Mfg. Company, Chicago; J. H. Schwacke, Wm. Sellers Company, Philadelphia; W. A. Layman, Wagner Electric Company, St. Louis; H. H. Rice, the Waverly Company, Indianapolis; D. C. Buell, Union Pacific Railway, and W. H. Vandervort, Root & Vandervort Company, Moline. In the evening a banquet will be served to the local members and visitors at the Business Men's Club.

The Union Thread Company, Cincinnati, has completed plans for moving its factory from its present city location to a site recently acquired at Carthage. It is stated that a three-story concrete building will be erected by the company, work on which will commence at an early date.

The Steel Foundry Company's plant at Winton place, Cincinnati, was sold at auction last week by Receiver W. D. Mellish to a party of capitalists from Chicago for $44,000. The plant represented an original outlay of about $175,000 and went into the hands of a receiver some time ago. Isaac Miller, whose address is given as the Palmer House, Chicago, is said to head the new investors, and it is stated that the plant will be put in operation at an early date.

The annual stockholders' meeting of the I. & E. Greenwald Company, Cincinnati, was held February 1. E. E. Greenwald retired from the Board of Directors and was succeeded by Lake Lilley of the Devere Electric Company. Henry Burhold was re-elected president of the company; Alexander Cunningham, vice-president, and W. B. George, secretary-treasurer and general manager. Edward Estep is shop foreman, succeeding Thomas L. Greenwald, who has been promoted to the sales department.

At the annual meeting of the Niles Tool Works, Hamilton, Ohio, all the old officers were elected. James K. Cullen is president; George T. Reiss, vice-president; Charles Cornell, treasurer; Joseph Blair, secretary, and Lucius Potter, assistant secretary. The year 1910 was reported as being a very prosperous one and the outlook for 1911 is excellent. Some large foundry additions are being made to the Niles plant, which will be completed about April.

Kirk & Blum, Cincinnati, are installing a dust collecting system for the Lunkenheimer Company, Cincinnati; a hot blast heating system for the Republic Iron & Steel Company, Youngstown, Ohio, and a shavings collection system for the Queen & Crescent Railroad at Somerset, Ky.

The Norwood Mfg. Company, Norwood, Ohio, is a new incorporation, with $10,000 capital stock, to manufacture window ventilators and sanitary household specialties. The incorporators are T. L. Kautz, Nathaniel B. Hadley, John M. Morehouse, Arthur J. Starr and Harry B. Barnes. A factory site has been selected in Norwood and a Cincinnati sales office has been opened at 127 East Ninth street. Heretofore the company has had its ventilators made under contract, but under the new arrangement it will be able to very much increase its output of all its specialties.

Prof. J. K. Renshaw, dean of the Cincinnati Continuation School, addressed a gathering of Toledo, Ohio, citizens, composed of the Board of Education members, prominent manufacturers and workingmen, February 2. The subject of the address was the continuation school problem, and from the interest manifested it is quite probable that Toledo will soon start a school modeled after the Cincinnati institution.

The Cincinnati Industrial Bureau and Cincinnati Convention League have been absorbed by the newly organized Cincinnati Commercial Association. The officers of the association are George F. Dieterle, president; E. V. Wilbern, vice-president; Luke W. Smith, treasurer; W. I. Finch, secretary, and Carl Dehoney, assistant secretary. At its annual meeting January 28, S. P. Egan of the J. A. Fay & Egan Company, the retiring president of the Industrial Bureau, was very highly complimented on the work of that organization.

The new plant of the H. P. Deuscher Company, Hamilton, Ohio, to take the place of the structures recently destroyed by fire, will soon be completed, and it is expected that the new shops will be in full operation by April 1.

The Multiple Jet Carbureter Company is a new incorporation at Dayton, Ohio, with $10,000 capital stock. The incorporators are John W. Raymond, Joseph Friedman, May C. Raymond, B. Semmelman, A. Semmelman and H. A. Kern.

The Synder Mfg. Company, Wapakoneta, Ohio, will rebuild its furniture factory recently destroyed by fire.

F. E. Horton, Ashtabula, Ohio, is reported to be in the market for some power plant equipment.

Vaile & Kirnes, manufacturers of hydraulic, electrical and pneumatic machinery, Dayton, Ohio, have incorporated as the Vaile-Kirnes Company, with $100,000 capital stock. J. Henry Vailes and Hugh W. Kirnes are named as the principal incorporators.

The Alliance Brass & Bronze Company, Alliance, Ohio, heretofore doing business under a partnership arrangement, has been incorporated, with $15,000 capital stock, by Charles W. Smith, Anna C. Roth, Laura M. Roth, C. J. Roth and F. B. Crist.

It is stated that the Reed Ice Company, a new incorporation at East Liverpool, Ohio, will erect a small ice plant. J. N. Hanley, William Rager, J. A. Reed, E. L. Reed and Willis Davidson are named as incorporators, and the capital stock of the new company is $10,000.

The Phelps Iron & Steel Company, Provident Bank Building, Cincinnati, dealer in and manufacturers' agent for iron and steel products, has been incorporated, with $10,000 capital stock, by Charles Murdock, Florence C. Murdock, Griffith L. Resor, B. Scarlett Phelps and Edward C. Phelps.

Bids will be received until February 21 by the Water Works Department of Coshocton, Ohio, for a pumping engine of 4,000,000 gal. capacity and two centrifugal pumping units of 15,000,000 gal. capacity per day.

Elyria, Ohio, has under consideration extensive improvements to its water works system, including additional water mains and improved pumping machinery.

Cleveland

CLEVELAND, OHIO, February 7, 1911.

The local machine tool market has been more active during the past week than for some time. Considerable business that had been pending since the latter part of last year was placed, these orders being for machinery for one new plant and for extensions to two others. The largest order aggregated about $20,000. Scattering inquiries for small lots of

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tools have also improved somewhat, and a fair volume of business in orders for the equipment of new industrial plants is in prospect. Builders of electrical equipment report considerable improvement in the demand for small motors, some nice orders having been received during the past few days and the outlook for future orders is encouraging. In the heavier lines of machinery, including handling equipment, business continues light. There is a fair volume of inquiry pending, but orders are slow in coming out. With the approach of spring, however, manufacturers are looking for a better volume of orders. The foundry trade continues quiet. Some contracts for light gray castings are being placed, but at rather low prices.

The Browning Engineering Company, Cleveland, is erecting a new power plant. All of the equipment has been provided for.

The Thatcher-Rueter Mfg. Company, Cleveland, has been incorporated, with a capital stock of $20,000, by James C. Thatcher, Henry F. Rueter, R. J. Shilling, W. G. Smith and George F. Rueter. The company will make dies, stampings, hardware specialties and engage in sheet metal work. A plant will be established in one of the Bradley power buildings, having leased 4000 sq. ft. of floor space. Equipment for the plant will be purchased shortly. This will include three lathes, two shapers, four drill presses and some small tools.

The Taylor & Boggis Foundry Company, Cleveland, will build a new plant to replace its No. 2 foundry, that property, located near Euclid avenue and East Fifty-fifth street, having been sold to the Pennsylvania Railroad. A site has not yet been selected. The new plant will include a foundry, machine shop and department for the manufacture of builders' hardware. Plans are now being prepared and work will be started early in the spring.

The Grasselli Chemical Company, Cleveland, is erecting a large plant at Meadowbrook, W. Va., for the manufacture of spelter and allied products. It will be ready for operation during the summer.

George W. Angell, formerly connected with the Erie Wire Nail Company, Erie, Pa., has established a plant at 2617 East Seventy-sixth street, Cleveland, for the manufacture of wire nail machinery and chaplet machinery for making chaplets cold. His present plant will be enlarged considerably and some new machinery will be required.

The Chamber of Commerce, Toledo, Ohio, has taken up the matter of erecting a power building to provide floor space for small industrial plants. A committee, of which Isaac Kinsey is chairman, has been appointed to investigate the matter.

Manufacturers in Toledo, Ohio, are planning an industrial exposition. A committee to form preliminary arrangements has been appointed, consisting of S. O. Richardson, chairman; George Hardy, D. C. Donovan, J. N. Willys, Frank Southard and H. M. Nussbaum.

The McNeil Boiler Company, Akron, Ohio, has purchased a tract of land adjoining its present site to provide room for plant extension.

The general contract for a new filtration plant in Grand Rapids, Mich., has been awarded to the Roberts Filter Company, Darby, Pa.

With a capital stock of $30,000, the Love-Casselman Company, Alliance, Ohio, has been incorporated to manufacture and deal in sheet metal by A. B. Love, C. W. Casselman and others.

The Indian Motor Car Company, Upper Sandusky, Ohio, has been incorporated, with a capital stock of $10,000, by S. W. Martin and others to manufacture automobiles.

The Canton Mfg. Company, Canton, Ohio, whose reorganization was recently announced, having been taken over by the interests that control the Multiplex Filing Device Company, has elected the following officers: President, Jacob F. Smith of Buffalo, formerly president of the Multiplex Company; vice-president, C. N. Vicary, who had been president and treasurer of the Canton Mfg. Company; treasurer, C. E. Stuart. The two plants will be merged. The capital stock has been increased from $100,000 to $200,000.

The Reliance Mfg. Company, Massillon, Ohio, has been incorporated, with a capital stock of $10,000, to manufacture hardware specialties. The incorporators are Frank C. McLain, M. R. Bissell, John Igelstrom, F. W. Arnold and John E. McLain.

The M. & M. Rubber Cement Company, Akron, Ohio, will enlarge its plant by the erection of two new buildings of fireproof brick construction, one 50 x 150 ft., one story, and the other 40 x 200 ft., two or three stories. The company will make several additions to its line of products.

The Foundries Company, recently incorporated at Orrville, Ohio, has purchased the Postelwaite planing mill plant in that city and will fit it up at once as a foundry.

B. T. Steiner, for a number of years secretary and general manager of the Gilliam Mfg. Company, Canton, Ohio, has purchased the stock holdings of Stuart S. Kurtz, who has retired as president and treasurer in order to devote his time to other interests, after being connected with the company for 30 years. Mr. Steiner has succeeded Mr. Kurtz as president and treasurer, and Samuel G. Zimmerman, who has been assistant secretary, becomes secretary. The company will continue the same lines of manufacturing as in the past. Recently the manufacture of wrenches was added to its other products.

New England

BOSTON, MASS., February 7, 1911.

Nothing has occurred to mar the belief that business is on the mend. On the contrary, various new indications of improvement are observed. January proved a much better month for the dealers than November and December. Good orders have been placed and a very considerable amount of business is in sight, with probability of the early booking of a good sized part of it. The builders of special machinery are quite busy and many inquiries are being received to indicate an increasing interest. However, this branch of the trade is usually more active when business is moderate, customers having mort time in which to give attention to improved equipment. The electric companies are making no complaint whatever. With some of them it would take no great amount of improvement to place deliveries in a bad way.

The Arlington Mills, Lawrence, Mass., is making inquiries for a large vertical boring mill, a number of engine lathes and several drills for its shops.

Beaudry & Co., Inc., 141 Milk street, Boston, will establish new shops with the purpose of increasing the present output. Inquiries are making for some $10,000 worth of tools, as was stated last week, but the list is somewhat tentative. It includes two planers, three lathes, several drills, milling machine, shaper, radial drill and miscellaneous machinery, comprising a complete shop equipment. The company will also be in the market for an engine and boiler. The location of the shops is not yet determined.

Alex. D. Morgan has resigned his position with the Becker Milling Machine Company and has resumed his personal business, the sale of machine tools, in which he makes a specialty of second-hand machinery. His address is 22 Bellevue street, West Roxbury District, Boston.

The Boston & Maine has not come to a decision as to the needs of the repair shop at Concord, N. H. No announcement of the location of the big repair shops has been made, but the question will probably be decided within a few days.

The Fisk Rubber Company, Chicopee Falls, Mass., will carry up several three-story buildings an additional story, giving additional space 47 x 138 ft., with ell 16 x 21 ft., 49 x 186 ft. and 36 x 57 ft.

The Springfield Gas Light Company, Springfield, Mass., will expend $250,000 for new apparatus for its works.

The latest Maine power project is that of Arthur B. Leach, New York, and Linwood C. Tyler, Bangor, Maine, who have applied to the Maine Legislature for the right to incorporate the Maine Power Company, to take over the Bodwell Power Company plant, 13 miles above Bangor, on the Penobscot River. The purpose is to spend $500,000 in developing the water power.

The Boston School Board has voted to expend $7000 for a central electric generating plant, to supply a number of school houses. The recommendation carries with it the use of a gas engine.

The Boston Motor Boat and Engine Show, held in Mechanics' Building, Boston, last week, was a very representative affair, a large number of manufacturers of engines, power boats and accessories being represented by exhibits. Very little general equipment, such as machinery and tools, was shown. The attendance was large and the indications point to a busy year for the manufacturers. Motor boating is increasing in popularity in New England, and the condition is reflected in the business of the large number of houses who supply this demand. The engine builders report the outlook very bright.

The industrial show which has been held in Worcester, Mass., for two years will be omitted this winter, the management having decided to join with the Boston Industrial Show, which will be carried out in a large way in Mechanics' Building in the autumn.

The P. H. P. Motor Truck Company, Westfield, Mass., has been organized to manufacture a light automobile truck, the design of E. R. Pendleton in an addition to be built to the building of A. B. Pendleton & Son on Main street. The company states that it is not in the market for machinery at this time.

The C. W. Kelsey Mfg. Company, Hartford, Conn., which will build a three-wheel motor vehicle, has decided to do no manufacturing for itself this season, but will buy the parts from which to assemble an estimated output of 10,000 vehicles.

The new factory of the National Spring Bed Company, New Britain, Conn., will consist of a main building 44 x 116

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ft., five stories, of heavy mill construction. A new boiler house will be 30 x 40 ft. Contracts for boiler and engine have been let.

The stockholders of the Pratt & Cady Company, Hartford, Conn., at the annual meeting, elected George W. Hayden a director to fill the vacancy caused by the retirement of A. W. Gilbert, the former president of the company, the other directors being James Nichols, Amos Whitney, F. F. Street, L. B. Brainerd, George C. Kimball and John Spencer Camp. Mr. Camp was elected president and treasurer, Mr. Hayden vice-president and general manager, Mr. Kimball secretary and Joseph A. Swift assistant secretary.

In petitioning the Massachusetts Legislature for permission to take over the Boston, Revere Beach & Lynn Railroad, the New York, New Haven & Hartford Company makes the statement that if satisfactory legislation is secured a double track tunnel will be built under Boston Harbor, connecting the eastern branch of the Boston & Maine and the Boston, Revere Beach & Lynn with the South Station, using a lower level of the station as a terminal for station purposes and connecting with the main line tracks at Back Bay. Under the plan at least two tracks of the New Haven line will be electrified from Readville to and through the tunnel, and also two additional tracks from the tunnel to Lynn and the Revere Beach & Lynn road to Lynn. It is also proposed to four-track the main line of the Boston & Maine beyond Lynn to Beverly, to build a four-track tunnel through the city of Salem and to operate by electricity at least as far as Beverly. To carry out these plans would involve the expenditure of many millions of dollars.

Indianapolis

INDIANAPOLIS, IND., February 7, 1911.

The Ridgeville Tile & Brick Company, Ridgeville, Ind., has increased its capital stock from $10,000 to $20,000. T. A. Almonrode is president of the company.

The explosion of a gasoline tank partially wrecked the plant of the Union Switch & Signal Company, at Valparaiso, Ind., January 31, causing a loss of $10,000.

Ezra C. Voris of Crawfordsville, Ind., purchased the United States Cement Company's plant at Bedford, Ind., at receiver's sale for $181,000. He represented a syndicate of the stockholders. The company had been in receiver's charge two years.

The plant of the Remy Bros. Electric Company, Anderson, Ind., manufacturer of magnetos, has been bought by Indianapolis capitalists, headed by Stoughton A. Fletcher, president of the Fletcher American Bank.

The Jeffersonville Mfg. Company, Jeffersonville, Ind., has secured a contract for 10,000 cots for Government use. Newton H. Myers is president of the company.

The Brooklyn Tool Company, Brooklyn, Ind., has been incorporated, with $10,000 capital stock, to manufacture tools. The directors are J. S. Spoor, H. T. Blake and I. Spoor.

The Kokomo Railway & Light Company, Kokomo, Ind., has enlarged its articles of incorporation so as to enable it to operate a steam heating plant. George J. Marott, Indianapolis, is president of the company.

The Barker-Brown Shoe Company, Huntington, Ind., has increased its capital stock to $250,000, and will build an addition to its factory buildings of brick, 50 x 140 ft., and will increase its working force from 250 to 500.

The Grosneckle Grille & Screen Company's plant at North Manchester, Ind., was burned January 30, with $10,000 loss.

The Altermatt-Wahl Mfg. Company, South Bend, Ind., has been incorporated, with $25,000 capital stock, to manufacture wood and metal articles. The directors are John F. Altermatt, George F. Wahl and N. G. Altermatt.

The Rider-Lewis Motor Car Works, Anderson, Ind., has been sold to Milwaukee capitalists, represented by Lester C. Matson, an attorney of that city. The price was $38,500 cash. The plant will be put in operation again with enlarged capital.

The Western Gas Construction Company, Fort Wayne, Ind., is in the market for some new traveling cranes to be used in its foundry; also conveying and elevating machinery for its coreroom to carry mixed core products.

The Frank Gruber Boiler Works, Fort Wayne, Ind., will add to its present shop the building, 60 x 95 ft., formerly used by the Bar street foundry.

The Menefee Foundry Company, Fort Wayne, Ind., has just completed an addition, 70 x 80 ft., to its molding department, and is in the market for new machinery to be used in this department. It has also installed a new 72-in. Whiting furnace, 10 to 12 tons per hour capacity.

D. A. Bohlin & Son, Indianapolis, Ind., are receiving bids for the construction of the St. Vincent's Hospital. The work includes electric power and lighting plant.

The Siler-Petit Company, Fort Wayne, Ind., recently incorporated with $250,000 capital stock. The company is now having its product manufactured under contract, but advises that it will erect two factories within the next nine months, one in Chicago and the other in New York. The class of machinery to be used will consist of lathes, millers, drill presses and light woodworking machines for pattern-making.

The M. Rumely Company, La Porte, Ind., has increased its capital stock from $2,000,000 to $3,000,000 to provide additional working capital.

The Logansport Radiator Equipment Company, Logansport, Ind., is contemplating the erection of an addition to its factory, consisting of a large foundry building, coreroom and machine shop. Other improvements contemplated include the installation of an electric light and power plant.

The Jacob A. Teeter Electric Company, Claypool, Ind., has been reorganized and will make extensive improvements.

The Sterling Electric Works, La Fayette, Ind., has been incorporated with $200,000 authorized capital stock, and has taken over the plant of the Sterling Electric Company of that city, engaged in the manufacture of automobile magnetos and other electrical equipment, including telephone work. The new company has issued $100,000 of bonds, which have been disposed of to redeem the bonds of the old company. The officers of the company are: Samuel T. Murdock, president, a local capitalist; R. B. Wallace, vice-president; Thomas Duncan, secretary and treasurer.

The city of Bedford, Ind., will install electric pumps at the water works pumping station. W. L. Hurd is chief engineer.

St. Louis

ST. LOUIS, February 6, 1911.

Inquiries continued good the past week with orders comparatively few, although fairly good sales have been closed by some of the dealers.

The Manufacturers' Railway announces that construction will begin forthwith on a large modern freight warehouse in South St. Louis to cost approximately $1,500,000.

The American Brake Company's extensive improvements are now rapidly nearing completion and the plant makes a formidable appearance on the Broadway frontage.

The Bignall & Keeler Mfg. Company, whose plant is at Edwardsville, Ill., is very busy on its line of high grade pipe machines.

The Corn Products Company, Granite City, Ill., is making some extensive improvements to its plant.

The Curtis & Co. Mfg. Company is busy on fine manganese castings.

The St. Louis Car Company has started up its plant with a large force of employees.

The Aubuchon-Garneau Candy Company, St. Louis, has been incorporated with a capital stock of $50,000. The officers of the company are: Henry C. Garneau, president and treasurer; William Aubuchon, vice-president, and Paul W. Taylor, secretary. The company is looking for a location on which to build its plant and expects to settle on a site in the next few days.

The Chicago, Burlington & Quincy Railroad Company has purchased property on Second street, for which $850,000 was paid. It is the present site of the Fulton Iron Works. It is rumored that the latter company will locate on six acres of ground along the Wabash Railroad and erect a foundry at a cost of over $100,000.

The Howett Mfg. Company, St. Louis, has been incorporated with a capital stock of $10,000. The incorporators are Wilbur E. Howett, Juliet C. Howett and George Barnett. The company will engage in the manufacture of railroad equipment.

The E. R. Hensel Steel & Copper Company, St. Louis, has been incorporated with a capital stock of $10,000. The incorporators are E. R. Hensel, S. M. Hensel and A. Burmeister.

The city of St. Louis will issue $100,000 in bonds for improvements to its water system outside of the city. Maxine Reber is city engineer.

The factory of the Osage Handle Company, Eldon, Mo., was burned January 21, causing a loss estimated at $7500. The factory will probably soon be rebuilt.

The plant of the Ferguson Waterproof Company at Second and Trudeau streets, St. Louis, was burned January 26.

Lewis Vogle and A. W. Sweyd of New York City, have purchased 160 acres of land near Weir City, Mo., upon which they will erect a $25,000 brick plant. W. H. Allen will be the manager of the new plant.

The American Agricultural Corporation is negotiating for the purchase of the Standard Reduction and Chemical Company's plant at Sands, Mo.

The Phoenix American Cob Pipe Company, Washington, Mo., will remove its factory to Boonville, Mo., a bonus of

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$25,000 having been raised by the citizens of Boonville. A four-story brick building will be erected. The company furnishes employment for 200 persons.

The Springfield Novelty Mfg. Company, Springfield, Mo., has been organized with a capital stock of $5000. The company will erect a suitable factory for the manufacture of its specialties, one of which is a window attachment made of wood and metal.

The Sedalia Brick & Tile Company, Sedalia, Mo., has been incorporated with a capital stock of $50,000. The incorporators are William Wilson of Edina, Jerome Moyer and H. W. Graham, of Sedalia, and others. The company will manufacture bricks, sewer pipe, roofing tile, &c.

The Marston Cooperage Company, Marston, Mo., has been incorporated with a capital stock of $10,000. The incorporators are Seth S. Barnes, O. B. Given, C. M. Barnes and others. The company will engage in the manufacture of cooperage stock.

The City Council of Kirkville, Mo., is considering the establishment of a lighting plant.

Detroit

DETROIT, MICH., February 5, 1911.

The past week, being the last week in January, itself the first month of the new year, has given manufacturers in this city an opportunity to judge, by comparisons, the outlook for 1911. In the matter of sales and orders, a great many state that it could not be better. Factory building bids fair to make history this spring, as every contractor in the city has his hands full. Few, if any, mechanics are idle, evidenced by the size of "help wanted" columns of the daily papers.

The organization of the Concrete Form & Engine Company has been completed. The company is a consolidation of the Collapsible Steel Form Company of Detroit and Carson City, and the New Belle Isle Motor Company of this city. The capital stock of $150,000 will allow the construction of a large plant.

The report that the Welch-Pontiac Car Company, Pontiac, Mich., will discontinue the manufacture of automobiles is denied by both A. R. Welch and F. S. Welch.

Franchises for an electric railroad from Adrian to Jackson, Mich., are being secured from the intermediate towns. Francis J. Burlask of Toledo, Ohio, is promoting the project.

Construction will soon be begun on a new power dam to cost $750,000 on the Menominee River, four miles above Iron Mountain. The project is in the hands of O. C. Davidson, of the Oliver Iron Mining Company, who plans to furnish power to the mines in the vicinity of the above city.

The Reed City Veneer Plant, Reed City, Mich., destoyed by fire some time ago, is to be rebuilt. Work on the plant will be commenced next spring.

The Elk Lime & Cement Company, Elk Rapids, Mich., will be reorganized. The plant which was shut down some time ago will soon be in operation if the efforts of Robert Williams and C. A. Whyland of Chicago are successful.

The Consolidated Fuel & Lumber Company, Negaunee, Mich., are arranging for the construction of a third warehouse, which is to be completed by next summer.

The old stave mill at Covington, Mich., the property of the Menasha Wooden Ware Company, has been leased by R. J. Howes and Payton O'Mara, for the construction of a saw mill.

Detroit automobile interests will gain materially by the formation of the new Studebaker Corporation. The E. M. F. plant will be increased in the spring and a big factory for the construction of trucks will be built in connection with the plant on Clark avenue.

The Adrian Novelty Company, Adrian, Mich., has been organized for the manufacture of vending machines. The machines are made to handle articles of all kinds and descriptions, designed, in many cases, to replace the clerk.

The Prison Board of Control of the Jackson State Prison will ask the State for an appropriation of $21,000 to cover the purchase of a new engine and generator for the prison power plant.

Cadillac, Mich., has authorized its city clerk and engineer to purchase new machinery for the city pumping station. The station will be ready for use by April 1.

The Mackinaw Transportation Company, in the person of Capt. L. R. Boynton, states that the company has decided to purchase another ferryboat, to be of 24-car capacity.

The Board of Commerce of Flint, Mich., is seriously considering a proposition to secure the location of a $300,000 automobile concern at present established in Chicago.

The city of Manistee, Mich., has approved of a contract with the Manistee Iron Works, whereby it agrees to transfer to the company $20,000 in park bonds. In return the company agrees to deed to the city a piece of land, and to give employment to 200 men for seven out of the next ten years. The step will mean the construction of a much larger plant, of considerable importance to the city.

The much heralded water works of the city of Saginaw, Mich., the construction of which was decided upon by a special election held last spring, has been knocked out by a decision of the State Supreme Court. The ruling has to do with a certain technicality affecting an amendment to the city charter, made necessary by the construction of the plant.

Business men of Hancock and Houghton, Mich, have organized a creamery company to be known as the Portage Lake Creamery. A committee has been appointed to attend to the purchasing of the necessary machinery.

Cheboygan capitalists are considering the organization of a company to take over the plant of the Cheboygan Boiler Works, Cheboygan, Mich. The plan is well under way and bids fair to establish a valuable industry for the city.

The Swartz Electric Company, Adrian, Mich., has turned to the manufacture of electric horns, a new product for this company.

The New Haven Coal Company, Owosso, Mich., recently purchased by Detroit capitalists, will begin active operations within the next few weeks. The company intends to greatly enlarge its capacity by the purchasing of new machinery.

The Parrot Heater Company has incorporated with a capital stock of $20,000. The plant will be located at Jackson, Mich., and will engage in the manufacture of gas and electric heaters.

The Port Huron Salt Company, Port Huron, Mich., will greatly increase its output during the present year. The installing of the double pan system will necessitate a larger addition to the plant, in conjunction with which improvements to the amount of $40,000 will be made.

The Detroit Pressed Steel Company, Detroit, has completed foundations for a building which will double the capacity of the company.

The John M. Lauer Machine Company of this city is laying plans for a large addition to its present plant. The present quarters are entirely inadequate.

Another chemical plant is to be located at Midland, Mich. The firm of Mercke & Co., with headquarters in Germany, is beginning the erection of a large plant for the manufacture of numerous chemical products.

The National Wire Cloth Company, Niles, Mich., is included in the merger of several wire cloth and wire products concerns, incorporation papers of which were filed at Clinton, Iowa, last week. The company has a capital stock of $1,500,000.

Charles J. Peterson, Ironwood, Mich., is opening up a granite quarry on his farm near Van Buskirk.

Ball & Son, Coldwater, Mich., will move their plant from Chicago and Clay streets to a site on Fremont street.

The Buhl Malleable Company, Detroit, Mich., is erecting an addition to its plant for the manufacture of open hearth steel castings, which it will begin to turn out about May 1. A building 65 x 300 ft. is being erected of steel and Detroit-Fenestra steel window sash construction. It will be equipped with a seven-ton furnace.

Milwaukee and the Northwest

MILWAUKEE, WIS., February 6, 1911.

The National Brake & Electric Company, Milwaukee, expects to complete in about three months extensive improvements to its plant, consisting of additions to the present foundry and machine shop as well as a new storage warehouse.

The Vilter Mfg. Company, Milwaukee, has installed a 500-kw. generator with cross compound condensing Corliss engine.

The Columbia Electric Light & Power Company, Pardeville, Wis., will build a lighting plant to be equipped with a 150-hp. boiler, one 125-hp. Corliss engine, one 100-kw. three phase, 60 cycle A. C. generator.

The Hough Shade Corporation, Janesville, Wis., will erect this spring an additional storage warehouse 40 x 80 ft., with brick walls and mill construction.

The A. A. Cutter Company, Eau Claire, Wis., will erect an addition to its plant this spring two stories and basement, with an electric freight elevator.

The Simmons Mfg. Company, Kenosha, Wis., has under construction a new steel and brick foundry, which will not require additional equipment, as it is erected on the site of an old foundry building which is being replaced.

The Menasha Wooden Ware Company, Menasha, Wis., contemplates erecting important extensions to its plant this spring, but definite plans have not yet been decided upon.

The C. A. Lawton Company, DePere, Wis., contemplates erecting a steel and concrete pattern storage room, 60 x 96 ft., on which work will begin as soon as the frost is out of the ground. The building will be of fire proof construction.

Mechanical and Civil Engineers.
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The MacKinnon Mfg. Company, Grand Rapids, Wis., expects in the near future to operate its plant 12 hours a day; the plant is running 10 hours at present. The increased output will be necessary to complete orders from wagon manufacturers.

The J. S. Rowell Mfg. Company, Beaver Dam, Wis., has plans under consideration for increasing its manufacturing facilities during the coming summer. The company's plant was enlarged about 50 per cent. a year ago, but finds the growth of its business will necessitate further extensions.

The Pacific Power & Light Company, Fruitville, Wis., will enlarge and improve its plant.

E. H. Goodman, city clerk, Townsend, Mont., will open bids February 14 for the construction of a pumping station.

Lewiston, Mont., is considering the establishment of a water works system at a cost of $100,000.

Argyle, Minn., is considering the establishment of a water works system.

Toronto

TORONTO, February 4, 1911.

Operations in many factories have been affected by an epidemic of grippe that appears to be attacking workers at all industrial centers in this province. In some manufacturing establishments the number of hands off work on this account is large, and the effect quite disorganizing. The pressure of orders for spring delivery is great in various lines, especially those having to do with agriculture, with navigation, with road-making, and with mining. Some of the towns that had about closed arrangements for the establishing of branches of manufacturing works in the United States have been notified that negotiations will not be resumed until the reciprocity agreeemnt between the Washington and Ottawa governments has been dealt with by the national legislatures concerned. It is stated that, in the event of the agreement being adopted, several arrangements for the locating of branch works in Canada will be cancelled. The reason is not that the change of tariff in every case would be sufficient to neutralize the advantage of location in Canada, but that it is regarded as probable that other instalments of reciprocity would follow this one. This immediate result of the agreement is being urged as a reason for opposing it at Ottawa, and will be adduced in the arguments that will be brought forward against it in the House of Commons next week. Oddly enough, the rank and file of Canadian manufacturers are not the chief enforcers of this point. As the agreement does not greatly impair their protection against the competition of factories in the United States, and as it operates to deter the opening of American branch factories in Canada, not much fault is to be found with it by the great majority of existing manufacturers in Canada.

The Imperial Oil Company at Sarnia, Ont., is reported to be suspending action on plans for increasing the capacity of its refinery, plans that were in a forward state when the reciprocity agreement was announced. If the plans are carried out the plant will be enlarged sufficiently to make the output one-third greater than it is.

Orders have been issued from South Bend, Ind., for the pushing on of the Oliver Plow Works' building programme at Hamilton, Ont. The erection of the assembly building at a cost of $200,000 is to be proceeded with at once. Altogether, it is said, there will be expended $1,500,000 on the company's works. The news that building operations are to be proceeded with gives satisfaction in Hamilton, as it was feared the reciprocity agreement might cause the company to change its plans.

Harry Cockshutt, ex-president of the Canadian Manufacturers' Association, and head of the Cockshutt Plow Company, Brantford, Ont., says that the reduction of the duty on plows and certain other agricultural implements to 15 per cent. ad valorem, will be injurious to the Canadian industry, unless, as in the case of harvesters and mowers, there is a drawback of practically the whole duty on the pig iron and rolled steel used as material.

W. J. Verity, head of the Verity Plow Company, Brantford, Ont., says that he doubts that the John Deere Company will now establish its works at Welland, Ont., as the new tariff arrangement with the United States must tend to make a Canadian branch appear less desirable.

At the annual meeting of the London Street Railway Company, London, Ont., on February 1, it was decided to build an up-to-date steam power plant and abandon the idea of using hydroelectric power from Niagara Falls.

At London, Ont., more than a hundred factory hands have been off work daily for the last 10 days on account of grippe.

The location of Port Mann, the Pacific terminus of the Canadian Northern Railway, has been decided on. It is to be a mile and a half east of New Westminster, and on the south bank of the Fraser River, British Columbia. The building up of this new terminal city is expected to make much business for manufacturers of structural material, equipment, &c.

A delegation of Pacific Coast men passed through Toronto, bound for Ottowa, on the night of February 2. Their mission is to obtain a charter for the British Columbia Steel Company, whose projected $10,000,000 plant is to be at or near the Canadian Northern Railway terminal point at Port Mann. They are supposed to have some business with the government on the subject of steel bounties.

In reply to an inquiry of a private member of the House of Commons a few days ago, the government said that the masonry of the Quebec Bridge will be finished by November, and that the tenders for the steel superstructure name dates running from 1914 to 1916 as the time for the completion of that work.

A motion has been passed by the City Council of Hamilton, Ont., calling for the consideration by the Board of Control of a proposal to build and equip a municipal plant for the distribution of hydroelectric power.

The Canadian Steel Foundries, Ltd., has been incorporated with a capital stock of $5,000,000, and head office at Montreal. This is the concern in which the Montreal Steel Company and the Ontario Iron & Steel Company, Welland, are to be merged.

H. R. Indhope, president of the Indhope Motor Company, Orillia, Ont., says that if the duty on automobiles is reduced 5 per cent. ad valorem, as is proposed in the reciprocity agreement, the duty on all parts and materials entering into automobile construction should be proportionately lowered.

The removal of the duty on type-casting and type-setting machines will reduce the price of these to the Canadian publisher $800 to $1000 each.

The Pacific Coast Construction Company, Victoria, B. C., has secured the Dominion Government contract to build a Marine Department depot at Prince Rupert, B. C. The price is $200,000. A large wharf, set up on patent ferro-concrete piles, is to be built, as well as work shops, power house, buoy shed and residence for the staff.

The Grand Trunk Railway Company will rebuild its shops in Ottawa East the coming summer.

Calgary, Alberta, is to have a municipal paving plant.

There is a surprisingly large movement of machinery over the winter road into the Porcupine mining camp in Northern Ontario.

Motor trucks are coming into use very rapidly in Canadian cities, and manufacturers and selling agents are meeting with a large demand for these wagons.

A generator of 1500 hp. has been transported over the land road from the Toronto & Northern Ontario Railway to Sandy Falls on the Mattajami River in Northern Ontario.

The Dominion Government has put in this year's appropriations $60,000 to be expended on improvements at Port Stanley, the port of London, Ont. Altogether between $200,000 and $250,000 will be expended there.

The Lakefield Canoe Building & Mfg. Company is erecting a new plant at Lakefield, Ont. It is to be fitted with the best machinery.

N. W. Curry, president of the Canadian Car & Foundry Company, is also president of the newly-incorporated Canadian Steel Foundries, Ltd. Other directors of the Car & Foundry Company are also on the board of the new merger. It is understood that the Canadian Steel Foundries, Ltd., will soon issue $3,000,000 of 6 per cent. bonds, to be guaranteed by the Car Company, and that the money will be expended on extensions.

The Casey Shaw Lumber Company, Sudbury, Ont., has taken over the building supply business there of F. C. Craneford. It will establish a modern sawmill at Long Lake. To its Sudbury works it will add a made-to-order house business.

The new power house of the Sherbrooke Railway Company, Sherbrooke, Que., is almost completed.

The Porcupine Imperial Mining Company, whose head office is in New York City, is arranging for the bringing in of plant to operate its property in the Porcupine mining field.

The Hamilton Machinery Company has been incorporated, with head office at Hamilton, Ont., as a machinery-selling company. It has several lines of domestic and foreign manufacture to handle in Canada.

The ratepayers of St. Catharines have authorized a by-law to give municipal advantages to the Steel & Radiation, Ltd., who will erect buildings in the city at a cost of $50,000.

The Canadian Pacific Railway Company is about to begin the construction of new offices in Toronto, to cost $1,000,000. The Dominion Bank is to put up a very fine building opposite the Canadian Pacific Railway's new office.

David Spencer & Co. have had plans prepared for a new

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departmental store building in Victoria, B. C., to cost $600,000.

A by-law is being prepared for the expenditure of $300,000 for an electric power plant by the city of Calgary, Alberta. Most of the money will be spent on sub-stations, transformers and machinery.

The Edmonton Heat & Power Company proposes to build a hydroelectric power plant about 60 miles north of the city of Edmonton, Alberta, and develop some hundreds of thousands of horsepower.

Texas

AUSTIN, TEXAS, February 4, 1911.

The demand for machinery for the improvement and enlargement of municipal public service plants and systems, such as electric light and power, water works and sewer disposal, is unusually brisk in the different cities and towns of Texas and the Southwest. The municipal ownership idea seems to be growing, and several bond issues have been voted recently by towns to take over the public utilities in the respective municipalities.

The City Council of Lagrange, Texas, has under consideration the matter of taking over the local water works plant and distributing system at the expiration of the present lease. If this is done improvements and extensions will be made.

The City Commissioners of Waco, Texas, have ordered an election to be held in that city February 14 to vote on the proposition of installing a municipal electric light plant.

The city of Lufkin, Texas, will install a new pumping plant and lay new water mains for its water works system. The question of whether the pumps shall be electric or steam driven is now being considered. A complete filtering plant will be installed in connection with the system.

I. J. Sander of Jacksonville, Texas, will erect a saw mill near Elkhart, Texas.

The Holland-Texas Irrigation Company is installing irrigation pumping machinery on its large farm near Cotulla, Texas. The pump is of large capacity.

The People's Light Company is installing considerable new machinery at its gas plant in Corpus Christi, Texas.

George Gwilt of Vernon, B. C., will install a clay working plant near Houston. Glazed ware and pressed brick will be manufactured.

Charles Malone, Plainview, Texas, will install a four-stand cotton gin at that place. The erection of a cotton seed oil mill is also contemplated.

The Texas Company, the large oil producing and refining company, which has its headquarters at Houston, has begun the development of a prospective gas field near Uvalde, Texas. It is stated that the company will pipe the gas to Eagle Pass and install a distributing system in that town if a sufficient supply of the fuel is developed. A syndicate, headed by J. S. Cartwright of Uvalde, Texas, is also carrying on development work in the same field with the view of piping the fuel to Eagle Pass and other towns.

The city of Amarillo, Texas, is extending its sewer system at a cost of about $50,000.

Story & Ezzell, San Antonio, Texas, have been awarded the contract by the County Commissioners of Bexar County for the construction of a bridge across the San Antonio River.

A. B. Lorino, Matagorda, Texas, will install an ice plant at that place.

George D. Moore, Detroit, Mich., is negotiating with the City Commissioners of Austin with the view of entering into a contract for the reconstruction of the dam across the Colorado River at this place and the installation of a hydroelectric plant, the proposed cost to be $1,000,000.

A. G. Hinn, Plainview, Texas, contemplates installing a creamery at that place at a cost of about $10,000.

The plans for the proposed reinforced concrete viaduct that is to be constructed by the city of Houston, Texas, to connect Main street with Montgomery avenue by bridging Buffalo and White Oak bayous, have been prepared and the construction work will begin about April 15. The proposed structure will cost about $500,000.

It is announced that the Producers' Oil Company will rebuild its machine shops at Humble, Texas, which were recently destroyed by fire, causing a loss of about $10,000.

W. E. Gillingham and A. M. Davis, Modesta, Cal., who recently purchased a ranch of 2580 acres of land near Edna, Texas, will convert the tract into a farm, and will install irrigation pumping machinery.

M. B. Goldenberg, Tucumcari, N. M., will build a factory for the manufacture of rope and bagging from bear grass. Machinery for stripping the leaves of the plant and for manufacturing the fiber will be installed.

The New Mexico Realty Company will install irrigation pumping plants on tracts of land near Tucumcari, N. M. J. W. Campbell, of Tucumcari, is manager.

If legislation which is now pending before Congress is passed, authorizing the Secretary of the Interior to lease water power under reclamation dams for longer than 10-year periods, the Water Users' Association of the upper Rio Grande valley of Texas and New Mexico, whose lands are embraced in the Government's Elephant Butte dam and irrigation project, will organize a subsidiary for the purpose of installing a hydroelectric plant and constructing an electric railroad down the valley for about 100 miles. The Water Users' Association has its headquarters in El Paso. Richard Burges and Felix Martinez, both of El Paso, are actively interested in the subsidiary proposition.

A syndicate composed of L. M. Scribner of San Francisco, Richard E. Abenheim of London, England, W. H. Moore of Mababi, state of Sonora, Mexico, and others will build a large lumber mill at Mababi. It will also erect a canning factory at that place and construct about 60 miles of railway to give its land and other holdings a transportation outlet. Mr. Moore is manager.

The Compania La Tolteca de Cemento Portland, S. A., of Tolteca, state of Hidalgo, Mexico, will double the capacity of its cement plant at that place, bringing the output up to 200 tons per day.

The Monterey Railway, Light & Power Company, Ltd., will receive bids up to March 1, for the installation of a gas plant and distributing system in Monterey, Mexico. The city has a population of 85,000. Lewis Lukes is vice-president and general manager of the company.

The Lockhart Ice Company, Lockhart, Texas, is doubling its capacity for the manufacture of ice.

The Houston Structural Steel Company, Houston, Texas, is proceeding with the improvements which will make it one of the greatest steel plants in the South.

Machinery for the new gas plant at Taylor, Texas, which was purchased in Pittsburgh, Pa., is en route. A. J. Zilker of Austin, Texas, is superintending the work on the water works which he recently purchased, introducing improvements and enlarging the capacity of the plant.

The hull house of the Planters' Oil Mill, Bonham, Texas, was burned January 25, causing a loss of $7000, fully covered by insurance.

The Greenville Broom Mfg. Company, Greenville, Texas, has increased its capital stock to $7500.

Vogt & Sons of Philadelphia will establish a packing house and fertilizer plant at Cuero, Texas. Charles Vogt is at Cuero making arrangements for the new industry.

The Texas Auto Specialty Mfg. Company, Dallas, Texas, has been incorporated with a capital stock of $25,000. The incorporators are L. L. Lane, H. H. Moore and Jennings M. Moore.

Farther Central West

OMAHA, NEB., February 6, 1911.

D. K. Barr, Louisville, Neb., will receive bids March 1 for the construction of a water works system to cost about $16,000.

Chappell, Neb., has under consideration the construction of a light and water works system.

Battle Creek, Neb., will expend $10,000 for the construction of a water works system.

The City Council of Lohrville, Iowa, is considering the installation of a water works system.

The Bentley & Olmstead factory, which burned recently at Des Moines, Iowa, will be moved to Ottumwa, Iowa, the latter city having offered the company a free building.

The new factory of the United Woodworkers Company at West Fifth and Taylor streets, Davenport, Iowa, is nearly completed. Plans for the machinery have been placed in the hands of some leading concerns, which are expected to submit bids within the next 10 days. The company is incorporated for $10,000.

The Davenport Bedding Company, Davenport, Iowa, successor to M. Cromer & Co., has begun the manufacture of mattresses at its new factory at 1027 West Forth street. M. Cromer, head of the old company, whose factory was burned September 7, is the president of the new concern.

It is reported that the Chicago & Northwestern Railroad Company has appropriated $400,000 for new railroad shops at Missouri Valley, Iowa. Construction of a new boiler and erecting shop will first be started, to be followed by a new storehouse and an addition to the roundhouse. Work will begin as soon as the spring opens.

The Pitt-Matthews Carriage & Auto Company, Des Moines, Iowa, has been incorporated with a capital stock of $10,000. The incorporators are Mabel A. Pitt, Edwin Matthews and R. G. Priebe.

The American Enamel Brick Company, Des Moines, Iowa, has been organized with $200,000 capital stock. The

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company has closed a contract with the Enamel Concrete Company to purchase one of the new $50,000 brick making machines. J. C. Mardis, one of the leading contractors of the city, will be the president and general manager of the new company. It is expected that the new plant will be completed by April 1. In the meantime, machines are being built in the local shops.

The city of Mount Vernon, Iowa, will advertise February 21 for bids for the construction of seven miles of sewage and a disposal plant.

The B. F. Swanson Company, Des Moines, Iowa, is erecting a factory at Omaha, Neb., to be devoted to rebuilding typewriting machines, which will give employment to between 30 and 40 men. H. E. Russell will be the manager.

San Francisco

SAN FRANCISCO, February 1, 1911.

The announcement of favorable action by the National House of Representatives on the Panama-Pacific Exposition project has resulted in an immediate improvement in the local market. Most of the metal working shops in San Francisco have been in need of new equipment for some time, but have kept out of the market until the exposition matter was settled. During the few hours since the decision was announced merchants carrying stocks have booked a large number of orders, some of them for large tools, and, while no large lists have come out, it is evident that the period of waiting has passed. Machine tool sales throughout the State have increased slightly during January, but still include very few important transactions, and no individual inquiries of unusual magnitude are coming out.

The general machinery market in San Francisco is also in a better condition, as it is known that many contemplated improvements to manufacturing and other industrial plants have been delayed by uncertainty regarding the exposition. Activity is gradually becoming more general in other parts of the State, though in some lines, such as sawmill and planing mill equipment, little business is expected before the middle of March. Several mining companies have placed substantial orders, and considerable equipment is being purchased by cement interests. Orders are expected shortly for a number of gold and reclamation dredges, steam shovels, &c. Traveling men report activity in all lines through northern California and southern Oregon, while the oil interests of southern California are entering the market on a larger scale than for nearly a year past. Local gas engine manufacturers are figuring on many inquiries for marine engines up to 150 hp., and report steady activity in the Australian and New Zealand trade.

The Pelton Water Wheel Company has moved its San Francisco offices from the Monadnock Building to the works at Nineteenth and Harrison streets.

The Western Laundry Machinery Company and the local branch of the American Woodworking Machinery Company have occupied a new building two doors below their former quarters on Fremont street, near Market.

The Ocean Shore Railway has been sold to the bondholders under foreclosure proceedings, and arrangements are to be made as soon as possible for the completion of the line, which will require the laying of several miles of track. It will be necessary to purchase considerable new rolling stock and motive power before the road can be placed on a regular operating basis.

The Vance Redwood Lumber Company has ordered from the Allis-Chalmers Company a complete steam turbine electric power plant for its mill near Eureka, Cal. The Allis-Chalmers Company has also taken an order for a large gas plant for the Holton Power Company, El Centro, Cal.

Lewis Lukes, vice-president of the Monterey Railway, Light & Power Company, Monterey, Mexico, will receive bids up to March 1 for the erection of a gas plant in that city.

Officers of the Eureka Foundry, Eureka, Cal., have been elected as follows: G. Y. Henderson, president; C. W. Pickett, vice-president; Geo. W. Watson, secretary, and manager. The Eureka Foundry is bidding on a lot of equipment to be used on the Humboldt Bay jetty. The requirements for this work will include a number of cars and locomotives, in addition to a large lot of small tools.

The Harbor Commissioners have placed an order with the Vulcan Iron Works, Wilkes-Barre, Pa., for an $11,525 locomotive, to be used on the belt railroad in San Francisco. They have taken bids on the erection of a grain elevator, and have granted a permit to the Government revenue service to erect two 30-ton scales at China Basin.

The Joshua Hendy Iron Works has received an order for a 40-stamp mill, amounting to about $50,000, from a Nevada mining firm.

G. H. Hayes proposes to spend about $15,000 on machinery to develop a gravel mine near Placerville, Cal.

The Oriental trade is steadily increasing in volume. A demand for American agricultural implements and machinery is being built up in the Manchurian grain country, and a Portland, Ore., firm is preparing a shipment of 500 plows for that country. A flour mill outfit for Forbes & Co., Kobe, Japan, formed the principal cargo of the Chicago Maru, on her last departure from Tacoma, Wash.

The California Pipe & Steel Company has started work on a new factory building at Taft, in the California oil fields.

The Los Angeles Chamber of Commerce is negotiating for the establishment of a zinc products factory. It is said that raw material could be obtained from the Yellow Pine district of southern Nevada.

G. M. Bradrick of the Bradrick Machine Works, Porterville, Cal., states that work will be started shortly on a new shop.

The Lane Mill & Machinery Company has been incorporated at Los Angeles, with a capital stock of $100,000, by C. C., J. C., G. M. and C. H. Lane and J. M. Hunter.

The Pacific Sashweight Foundry has been incorporated at Los Angeles, with a capital stock of $25,000, by E. C. Wilson, J. W. Begg and E. A. Buchanan.

The Gas Power Machinery Company has been incorporated at Los Angeles, with a capital stock of $200,000, by Lyman Stewart, E. C. Sterling, G. R. Harrison, F. C. Nellis and H. A. Grive.

The Warman Steel Casting Company has been incorporated at Los Angeles, with a capital stock of $50,000, by G. B. Warman, N. W. Warman, N. C. Heron, R. W. Ellis and C. W. Foote.

The Chamber of Commerce of Redondo, Cal., is negotiating for the establishment of a crucible steel plant at that place.

The Riverside Portland Cement Company is proceeding with its new plant in southern California, and has already placed its order for tube mills, &c.

The Pacific Gas & Electric Company is preparing for the installation of a lot of new machinery at its plants in Sacramento, Cal. Plans have already been completed for a new 15,000-hp. steam turbine generator.

Balfour, Guthrie & Co. are rapidly getting their plans in shape for a large cement plant near Bellingham, Wash. A new cement project is being started at San Francisco by the Spreckels interests, though no definite action has been taken aside from the purchase of a site.

The Union Oil Company has purchased a 75-acre tract adjoining its present plant at Martinez, Cal., and it is understood that a lot of new equipment will be added.

The Royal Enameling & Stamping Works, Des Plaines, Ill., is in communication with the Chamber of Commerce of Alameda, Cal., with a view to starting a branch factory in that city.

The California Steel Monolithic Company is preparing to put up a factory near San Rafael, Cal.

The City Council of Long Beach, Cal., is planning to establish a municipal water works system.

The South

CHATTANOOGA, TENN., February 7, 1911.

The Lucas-Wallace Mfg. Company, Paducah, Ky., has been organized to manufacture a new patented carbureter for gasoline and other hydrocarbon engines. The company has equipped a shop and has purchased machinery for its present needs and expects to begin manufacturing operations about February 15.

E. J. Glass, manager of the municipal electric light plant at Nicholasville, Ky., is considering plans for the installation of a 150-hp. boiler and a 75-hp. steam engine.

Bids will be received by the Mayor and Board of Aldermen, Dalton, Ga., until February 23, for furnishing material for the enlargement of the water works and electric system. The plans and specifications adopted call for one 150-hp. boiler, one 300-hp. feed water heater, two turbine pumps with direct connected induction motors, two compound condensing engines with condensers, two 150-kw. A. C. generators with five panel switch board.

The Birmingham Buggy Company, Birmingham, Ala., will erect a wagon plant at Avenue E and Eighteenth street, 70 x 150 ft., four stories, of concrete construction. The plant will include a down draft blacksmith shop with ten fires. The estimated cost is $75,000.

The Mobile Terminal Company, Mobile, Ala., will erect a power house at Alabama Port to furnish power for the operation of a large electric dredge.

The Veitch-Matthews Engine Company, Birmingham, Ala., recently reorganized with $250,000 capital stock, is

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planning the construction of a plant for the manufacture of turbo-rotary engines. Dr. Lovett, fiscal agent, 1203 Empire Building, Birmingham, is asking for bids on equipment for machine shop and foundry. The officers of the new company are I. A. Lewis, president; George Vietch, Sr., vice-president; E. L. Huey, treasurer, and J. M. Lovett, secretary.

Howell Adams, of De Ridder, La., will erect a bottling plant at Many, La.

The Southwest

KANSAS CITY, MO., February 6, 1911.

The citizens of Spring Hill, Kan., have voted to issue $9000 in bonds for the establishment of an electric light plant.

H. V. Forest, Kansas City, Mo., has petitioned the City Council of Kearney, Mo., for a franchise to establish an electric light plant.

The Queen Bee Stove Company, Tulsa, Okla., has under construction a two-story factory building, 48 x 112 ft., of concrete and steel, which it expects to have ready for occupancy about April 1. The company will manufacture a full line of gas ranges and heaters. The company will buy a gas engine, electric motors, grinding machinery, pipe cutting and threading machines, drill presses, an elevator and a full line of sheet iron working tools.

The Kansas City Hay Press Company, Kansas City, Mo., whose foundry and equipment were recently destroyed by fire, advises that it will rebuild immediately.

C. W. Parker, engaged in the manufacture of amusement devices, is removing his manufacturing business from Abilene, Kan., to Leavenworth, where a new concrete building is under construction.

The City Council of Muskogee, Okla., has plans prepared for improvements to its water works system.

J. S. Lewis, Ogden, Utah, has petitioned the Council for a franchise for the construction of an electric light plant.

Dodge City, Kan., is planning improvements to its lighting system.

Ira Hickman, Spearville, Kan., is preparing to construct an electric light plant.

Snyder, Okla., is considering the establishment of a water works system.

The Mehle Packing Company, Tulsa, Okla., has increased its capital stock from $25,000 to $50,000, and will practically double the capacity of its plant in the near future. U. Holderman is the president of the company.

A. H. Lightner, Milian, Mo., has purchased an artificial ice plant at Claremore, Okla.

The United Mines Company, Joplin, Mo., is erecting a zinc concentrating mill at Davis, Okla. The first carload of machinery has arrived.

The plant of the Winfield Mill & Vibrator Company at Drummond, Kan., was destroyed by fire January 25, causing a loss estimated at $20,000.

The Cold Storage Company, Siloam Springs, Ark., has let the contracts for the erection of its buildings.

The Adams Lumber Company, De Queen, Ark., has secured a mill site at Ashdown, Ark., and will operate a sawmill and planing mill at that place. New machinery has been purchased and will be installed as quickly as possible.

E. C. Brice of Mansfield, Ark., is forming a company to erect at Little Rock, Ark., a $50,000 plant to manufacture cement shingles, fence posts, &c. The cement used by his process is to be mixed with clay and heated with electricity.

The plant of the Fort Smith Ice & Cold Storage Company, Fort Smith, Ark., was recently destroyed by fire causing a loss of $5000.

The larger of the two Kimball Lacy mills at Arkansas City, Ark., was burned January 27, entailing a loss of $50,000, which is covered by insurance.

The Board of Directors of the Arkansas Foundry Company, Little Rock, Ark., will issue $5000 preferred stock. Some improvements in the plant are contemplated.

The Helena Gas & Electric Company, Helena, Ark., has been organized for the purpose of taking over the properties of the Helena Gas Company. The new company intends to install new machinery and apparatus. The incorporators are Claude S. Fitzpatrick, J. B. Miles, Jr., W. J. O'Brien and Judge Lea Mundt.

The saw and planing mill belonging to Francis Shaw, Jasper, Ark., was burned January 30, entailing a loss of about $5000.

The Texarkana Broom & Mop Company, Texarkana, Ark., has been incorporated with a capital stock of $10,000. The incorporators are Q. O. Turner, J. B. Wyche and E. E. Bricker.

Government Purchases

WASHINGTON, D. C., February 6, 1911.

The Bureau of Supplies and Accounts, Navy Department, Washington, will open bids February 14, under schedule 3278, class 11, for furnishing one 2-ton side blow converter.

The Paymaster General, Navy Department, Washington, will open bids February 14, schedule 3279, class 21, for one set of gasoline machinery, and schedule 3296, class 22, for one Mosher marine water tube boiler.

The Inspector of the twelfth lighthouse district, Chicago, Ill., opened bids January 4 for furnishing one set of compressed air fog signal machinery for the Peshtigo Reef light vessel No. 77, as follows: De LaVergne Machine Company, New York, $1511; Ingersoll-Rand Company, New York, $1724; August Mietz, New York, $1900 and $2200; American Air Compressor Works, New York, $2049.

The Inspector of the third lighthouse district, Tompkinsville, N. Y., opened bids January 16 for furnishing one four-drum double cylinder hoisting engine for the tender Iris, as follows: Lidgerwood Mfg. Company, New York, $2340 and $1598; Hyde Windlass Company, Bath, Maine, $1550; Williamson Bros. Company, New York, $1958.

The Inspector of the third lighthouse district, Tompkinsville, N. Y., opened bids January 23 for furnishing one 35-hp. motor, two 20-hp. motors and one 15-hp. motor, as follows: Crocker-Wheeler Company, Ampere, N. J., $1482; General Electric Company, Schenectady, N. Y., $1479; Fort Wayne Motor Works, New York, $1535.60; Western Electric Company, New York, $1535.50.

The purchasing agent of the Isthmian Canal Commission, Washington, opened bids January 27, as follows:

Class 1. One 25-ton trolley crane—Bidder 4, Cleveland Crane & Engineering Company, Wickliffe, Ohio, $6530; 12, Morgan Engineering Company, Alliance, Ohio, $6495; 14, Niles-Bement-Pond Company, New York, $6145; 21, Whiting Foundry & Equipment Company, Harvey, Ill., $5445.

The Bureau of Supplies and Accounts, Navy Department, Washington, opened bids January 21, as follows:

Class 32. Two 31-hp. motors and one 10-hp. motor—Bidder 66, Diehl Mfg. Company, Elizabethport, N. J., $775.

Class 111. One 100-hp. induction motor—Bidder 1, Allis-Chalmers Company, Milwaukee, Wis., $1331; 101, General Electric Company, Schenectady, N. Y., $1635; 202, Reliance Electric & Engineering Company, Cleveland, Ohio, $1552; 267, Westinghouse Electric & Mfg. Company, Washington, D. C., $1642; 268, Wagner Electric Mfg. Company, St. Louis, Mo., 1574.38.

The Faeth Iron Company's Enlargement.—The Faeth Iron Company, Kansas City, Mo., has increased its capital stock from $250,000 to $350,000. It has completed a manufacturing building, 65 x 80 ft., four stories and basement, of standard mill construction, and equipped with automatic sprinklers. A new iron and steel warehouse, 46 x 250 ft., is of steel and concrete construction and has a capacity of 6000 tons. The general office, 46 x 100 ft., is heated and ventilated by the fan system, ventilating in the summer and heating in the winter. The warehouse building is equipped with two electric elevators and with spiral chutes for discharging merchandise from the upper floors to the shipping platform. A railroad siding, with a covered shipping dock, provides ample shipping facilities. The floor space in the new buildings figures 150,000 sq. ft., or almost three and one-half acres. Charles E. Faeth is president; W. J. Dean of Minneapolis, vice-president; C. E. Plank, secretary and treasurer.

The Carnegie Steel Company, Pittsburgh, Pa., is sending out stock list No. 6 of its Waverly Warehouse, Newark, N. J. The list shows the sizes of angles, bars and plates and other materials carried in the warehouse, and the tonnage of each on hand. Edwin A. Amaden is general superintendent and Lewis S. Sitts is sales agent of the Waverly warehouse. A telegraph and telephone code is given, which will facilitate placing of orders. A table is also printed showing the standard classification of extras on steel bars and shapes as adopted September 1, 1909.

The Bowles-Gifford Company, contracting engineer, has removed its offices from 17 West Forty-second street to rooms 1214-1215, 25 East Twenty-sixth street (Madison Square north), New York City.

CURRENT METAL PRICES.

The following quotations are for small lots, New York. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market rep

IRON AND STEEL—

Bar Iron from store—

Refined Iron:

1 to 1¼ in. round and square	₩ lb 1.75¢
1½ to 4 in. x ⅜ to 1 in.	₩ lb 1.85¢
1½ to 4 in. x ¼ to 5-1	
Rods—⅜ and 11-16 round and square	₩ lb 1.85¢

Angles:	Cts ₩ lb
3 in. x ¼ in. and larger	2.00¢
3 in. x 3-16 in. and ⅛ in.	2.25¢
1½ to 2½ in. x ¼ in.	2.10¢
1½ to 2¾ in. x 3-16 in. and thicker	2.00¢
1 to 1¼ in. x 3-16 in.	2.10¢
1 to 1¼ x ⅛ in.	2.20¢
⅞ x ⅛ in.	2.30¢
¾ x ⅛ in.	2.40¢
⅝ x ⅛ in.	3.45¢
½ x 3-32 in.	4.25¢

Tees:	
1 in.	2.65¢
1¼ in.	2.45¢
1½ to 2½ x ¼ in.	2.15¢
1½ to 2¾ x 3-16 in.	2.35¢
3 in. and larger	2.05¢
Beams	2.00¢
Channels, 3 in. and larger	2.00¢
Bands—1½ to 6 x 3-16 to No. 8	2.30¢
"Burden's Best" Iron, base price	3.15¢
Burden's "H. B. & S." Iron, base price	2.95¢
Norway Bars	3.60¢

Merchant Steel from Store—

	per lb
Bessemer Machinery	1.90¢
Toe Calk, Tire and Sleigh Shoe	2.50@3.00¢
Best Cast Steel, base price in small lots	7¢

Sheets from Store—

	Black: One Pass, C.R Soft Steel.	Black: R. G. Cleaned.
No. 16	₩ lb 2.55¢	2.80¢
Nos. 18 to 20	₩ lb 2.70¢	2.90¢
Nos. 22 and 24	₩ lb 2.75¢	3.00¢
No. 26	₩ lb 2.80¢	3.10¢
No. 28	₩ lb 2.95¢	3.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment ₩ lb 12 @14½

Patent Planished, W. Dewees Wood ₩ lb A, 10¢; B, 9¢ net.

Galvanized.

Nos. 12 and 14	₩ lb 2.95¢
Nos. 22 to 24	₩ lb 3.30¢
No. 26	₩ lb 3.50¢
No. 28	₩ lb 3.80¢

No. 20 and lighter 36 inches wide, 25¢ higher

Genuine Iron Sheets—

Galvanized.

Nos. 22 and 24	₩ lb 5.75¢
No. 26	₩ lb 6.25¢
No. 28	₩ lb 7.25¢

Corrugated Roofing—

2½ in. corrugated.	Painted	Galvd
No. 24 ₩ 100 sq. ft.	$3.85	4.80
No. 26 ₩ 100 sq. ft.	2.95	4.00
No. 28 ₩ 100 sq. ft.	2.60	3.75

Tin Plates—

American Charcoal Plates (per box.)

"A.A.A." Charcoal:	
IC, 14 x 20	$6.35
IX, 14 x 20	7.60
A. Charcoal:	
IC, 14 x 20	$5.40
IX, 14 x 20	6.50

American Coke Plates—Bessemer—

IC, 14 x 20 107 lb	$4.40
IX, 14 x 20	5.40

American Terne Plates—

IC, 20 x 28 with an 8 lb. coating	$8.50
IX, 20 x 28 with an 8 lb. coating	10.50

Seamless Brass Tubes—

List November 12 1908. Base price 18¢

Brass Tubes, Iron Pipe Sizes—

List November 13, 1908. Base price 18¢

Copper Tubes—

List November 13, 1908. Base price 21¢

Brazed Brass Tubes—

List August 1, 1908. 19½¢ ₩ lb

High Brass Rods—

List August 1, 1908. 14½¢ ₩ lb

Roll and Sheet Brass—

List August 1, 1908. 14½¢ ₩ lb

Brass Wire—

List August 1, 1908. 14½¢ ₩ lb

Copper Wire—

Base Price. Carload lots mill 13½¢

Copper Sheets—

Sheet Copper Hot Rolled, 16 oz (quantity lots) ₩ lb 18 ¢

Sheet Copper Cold Rolled, 1¢ ₩ lb advance over Hot Rolled.

Sheet Copper Polished 20 in. wide and under, 1¢ ₩ square foot

Sheet Copper Polished over 20 in. wide, 2¢ ₩ square foot

Planished Copper, 1¢ ₩ square foot more than Polished.

METALS—

Tin—

Straits Pig ₩ lb

Copper—

Lake Ingot	₩ lb 16
Electrolytic	₩ lb 14
Casting	₩ lb 14½

Spelter—

Western ₩ lb

Zinc.

No 9, base, casks ₩ lb 8 ¢ | Open ₩ lb

Lead.

American Pig	₩ lb 5
Bar	₩ lb

Solder.

½ & ½, guaranteed ₩ lb 28

No. 1 ₩ lb 28

Refined ₩ lb 24

Prices of Solder indicated by private brand vary according to composition.

Antimony—

Cookson	₩ lb
Hallette	
Other Brands	

Bismuth—

Per lb $2.00@$2.25

Aluminum—

No. 1 Aluminum (guaranteed over 99% pure), in lots for remelting

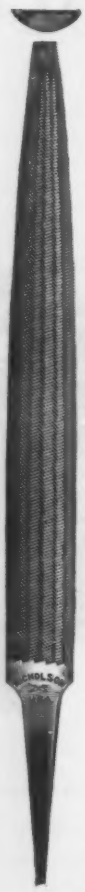
Rods & Wire Base Price

Sheets Base Price

Old Metals.

Dealers' Purchasing Prices Paid in New York

	Cents
Copper, Heavy cut and crucible	₩ lb 10.75@11
Copper, Heavy and Wire	₩ lb 10.50@10.75
Copper, Light and Bottoms	₩ lb 9.50@9.75
Brass, Heavy	₩ lb 7.00@7.25
Brass, Light	₩ lb 5.50@5.75
Heavy Machine Composition	₩ lb 9.25@9.50
Clean Brass Turnings	₩ lb 7.00@7.25
Composition Turnings	₩ lb 8.25@8.50
Lead, Heavy	₩ lb 4.12
Lead, Tea	₩ lb 3.50
Zinc Scrap	₩ lb 4.00



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